ASL

Australian Society
for Limnology Inc.

ASL

Australian Society
for Limnology Inc.

Australian Society
for Limnology Inc.

ASL

Australian Society
for Limnology Inc.

ASL

NEWSLETTER

Volume 38 #3
September 2000

Registered by Australia Post
Print Post Publication No.PP381667/00125

ISSN 1037-2512

AUSTRALIAN SOCIETY FOR LIMNOLOGY INC.

The Australian Society for Limnology (ASL) is an Australian-based scientific society whose focus is the study and management of inland waters. The ASL was established in 1961, and has a current membership of over 650 researchers, managers, engineers, teachers and tertiary level students from all states and territories. Members have a strong professional interest in inland aquatic issues, including the maintenance of biodiversity, the maintenance and/or restoration of water quality, and the wise use of aquatic resources. The Society also has a strong interest in fostering the scientific and intellectual development of tertiary students.

The Society includes members working in government agencies, tertiary institutions and many industries related to aquatic resources. Through their daily activities, members have contact with local communities and are in a sound position to interpret and advise on inland water issues. The Society has a substantial knowledge base, and has assumed a responsibility to ensure that this is available to those who manage inland waters.

Accordingly, the charter of the ASL is to further our understanding of Australia's inland waters and to promote their wise use and sustainable management. In this manner we will contribute to the continued existence of this valued resource and the maintenance and enhancement of the quality of life for all Australians.

The ASL regularly produces a newsletter with notes on limnological activities, articles of interest, book reviews and announcements of upcoming events likely to be of interest to Members.

EXECUTIVE OFFICERS 2000-2001

President
Dr Jane Chambers
Environmental Science, Murdoch University, Murdoch WA 6150
Ph: 08-9360 2739 Fax: 08-9310 4997 Email: chambers@essun1.murdoch.edu.au

Vice-President
Dr Andrew Boulton
Ecosystem Management, The University of New England, Armidale, NSW, 2351
Ph: 02 6773 3760 Fax 02 6773 2769 Email: aboulton@metz.une.edu.au

Immediate Past President
Dr Pierre Horwitz
Centre for Ecosystem Management, Edith Cowan University, Joondalup, WA 6027.
Ph: 08-9400 5558, Fax 08-9400 5717 Email: p.horwitz@cowan.edu.au;

Secretary
Dr Richard Marchant
Museum of Victoria, 71 Victoria Cresent, Abbotsford, VIC 3067.
Ph: 03-9284 0218. Fax 03-9416 0475. Email: rmarch@mov.vic.gov.au.

Treasurer/Membership Officer
Mrs Margaret Hart
22 Netherby Avenue, Wheelers Hill, VIC, 3150.
Ph: 03-9545 3549. Fax: 03-9545 3549 Email m.hart@sci.monash.edu.au

Membership Information and a list of the Regional Executive Officers can be found at the back of this Newsletter.

CONTENTS

Contents 3
Editorial 4
President's report 5
Letters to the Editor 7
cotilleo 10
Fasts 25
A Postcard from The Free Market 32
Postcard from Cambodia 35
Articles 36
Announcements 53
180 minutes 63
I've been to.... 73
ASL Volunteers 82
ASL Membership form 85
Regional Executive Members 1990-2000 87
Editorial Address 87

Material for publication in the **Volume 38 #3 Issue** of the Newsletter should be sent to the Editor (see back pages) by **30th November 2000**.

All articles should be forwarded, if possible, as unformatted text on a disk or via email.

ASL Home Page

http://www.asl.org.au/

This Newsletter is printed by Border Multi Print, Wodonga, packaged by Kalianna Pty Ltd and distributed by Australia Post.

Membership Information and a list of the Regional Executive Officers can be found at the back of this Newsletter.

EDITORIAL

Everybody seems to have been active since the last newsletter. We have more gossip, FASTS, postcards, Exec meetings, announcements, articles etc. than ever before. A big thank you to all those who contributed. There are also two letters to the Editor, which make very interesting reading, and we see the first message from our new President, Jane Chambers. She has overrun her allotted one page limit by about 40 words, but it was pretty good for a first effort, so I'll let her off this time.

The electronic newsletter is now a goer and a sub-committee has been formed to oversee its implementation. Further detains should be available in the December issue of the Newsletter. Anyway, for those of you looking forward to techno-ASL newsletters, you'll have to cope with the paper edition for a little while longer. Meanwhile for the techno-addicts the newsletter is still being put on the web page but it is now password protected. The user name to get the newsletter open is asl_news and the password is private11. Have a go to see if you can open it.

Happy reading.

The Ed.

PRESIDENT'S REPORT

Our recent congress in Darwin was yet again an excellent one due to the hard work of Abbie Spiers, Maryanne McKaige and a horde of student helpers making everything go smoothly. I think anyone who went would join me in thanking these two tremendously – what an effort! This congress showed some new initiatives in the form of the Snowy River Forum and the Australian Wetlands Forum. And.... I was elected President and am thereby typing my very first President's report, praying I don't get a reject slip. I look forward to a very productive term, both in forwarding our momentum in being pro-active on environmental issues and seeking means to improve the society for members. If you have any ideas, comments or concerns regarding the society I'm only an email or letter away (contact details on inside front cover). I'd like to thank our Immediate Past President Pierre Horwitz for his excellent leadership and initiatives over the past two years and for making the transition so easy for me.

The Australian Wetlands Forum took place during the ASL congress at Darwin. It was organised by Max Finlayson, Pierre Horwitz and Michelle Handley and promoted linkages between ASL and WWF, Wetland Care, other NGOs, government and private business to seek solutions to the problems faced by wetlands nationwide. I think one of the greatest benefits created by this forum was the understanding of different groups agendas, the way in which we can interact to the benefit of inland waters and just the straightforward meeting face to face to discuss matters that concern us all. Thanks Max, Pierre and Michelle for your vision.

The Snowy River Forum resulted in ASL at it's dynamic best! After an afternoon's forum at ASL where the issues of the Snowy River were put forward and discussed, a position statement and recommendations were drafted. This was circulated via the ASL listserver for comment, finalised by the Snowy River subcommittee, ratified by the exec and sent off in time for submission to Government for consideration of their draft EIS all within 3 weeks of the congress. A fantastic effort and all credit to Deb Nias, Sam Lake, Tim Doeg and Rhonda Butcher for their organisation and for all those members of ASL that contributed (there were a lot of you). Great to see ASL really get behind something so effectively! You can read the submission in this newsletter or on the webpage.

We've had several local meetings with the regular Victorian chapter getting together on 20th July, the Tasmanian chapter meeting the first Monday of every month, new Queensland chapter meetings being set up and a special Olympic presentation in Sydney on 15th August. These are generally well advertised but if you haven't heard about them contact your state rep so you don't miss out next time, they're a great way to keep in touch.

On other topics our very enthusiastic executive has got behind several initiatives. Andrew Boulton (vice Pres) and team are seeking ways that ASL can promote and assist students to get ahead in their studies and careers. One avenue is to have a get together at congresses to break the ice for students and help them get the most out of the congress. Andrew would love to have some student input on this – if you're a student and would like to get involved please get in contact with him (see inside front cover). Simon Josey has been very active on the web page and we will be continuing to increase the services we can provide at the ASL site (http://www.asl.org.au). Simon and the Membership committee are looking at ways to facilitate electronic distribution of the newsletter for those that prefer this medium. The ASL Policy Standing Committee is up and running with 2 new representatives from the membership Gillian Dunkerley and Ngaire Phillips.There are 3 new policy documents in the pipeline at present.

The next ASL Congress will be held at Echuca/Moama on the Murray River September 2001 but before then we have SIL in Melbourne in February, so I hope to catch up with you all soon.

Cheers, Jane Chambers
1st September 2000

LETTERS TO THE EDITOR

Justin Brookes
Research Scientist, CRC for Water Quality and Treatment
PMB 3, Salisbury, SA, 5108

September 4, 2000

The Editor, Australian Society for Limnology,

Over the past few years there has been a push within the Australian Society for Limnology to take a more active role in directing management and policy decisions. There has been considerable debate about whether ASL should respond formally to issues of wetland conservation and the like. Part of the trend towards a management focus has been reflected in talks and forums at ASL congresses. This was most evident of ASL 2000 where a large component dealt with management and not with scientific study.

I think we need to maintain some division within ASL between scientific research and management/policy in order to maintain the integrity of ASL as a scientific body. Whilst I recognise the need for management, and like most scientists am involved in management decisions, I am also concerned with the lack of scientific papers presented at ASL. It is this scientific information which allows knowledgeable management decisions to be made but also stimulates ideas and discussion for future scientific study. The advancement of limnological science will be compromised if we evolve into a management society relying on the historical investment in limnological study to direct management. The new science must be presented at ASL which is the appropriate venue where managers can attend and gain a scientific understanding about the systems they manage.

If the succession from scientific presentations to management continues ASL will not attract the scientists who have guided ASL to its present standing. I encourage the experienced scientists to attend ASL and present their research.

Dr Justin Brookes

WHY IS ASL PADDLING UP THE WRONG CREEK?

Over the past decade the ASL has engaged in a serious re-analysis of its place in the world. Starting with the Presidencies of Stuart Bunn and Margaret Brock, the Society has gradually adopted a more pro-active approach to the management of aquatic resources. This change was continued under my Presidency, and expanded further under subsequent Presidents, Max and Pierre. The basis of these changes was a perception that the ASL had contributed little to the management of aquatic resources in Australia, and that this could be remedied, in large part, by adopting an advocacy approach.

These changes have now gone too far. The crescendo reached its apogee last week at the 39th Annual Congress in Darwin, when the voice of science could barely be heard above the din of managerialism. I have attended ASL Congresses for the past 15-odd years, and the program of the meeting just passed was, by far, the least satisfying. Many other limnologists to whom I spoke during and after the Congress were of the same opinion. It is no coincidence that managerialism, having attained its zenith at the Congress, tallied with the scientific content reaching its nadir. The Society is now in grave danger of losing sight of its real strengths, alienating a large proportion of its membership and, ironically, failing to achieve a real, positive and long-lasting impact on aquatic-resource management.

For those desiring increased limnological advocacy, there already exist a great many opportunities to be active in the conservation movement. If yours is a chardonnay-sipping type of conservation, a number of groups exist that would provide fullfilment. A more grass-roots approach is provided by the Wilderness Society. Those of a radical bent might opt for EarthFirst!. The most extreme could become feral and indulge in a little bit of monkey wrenching. But the ASL is none of these things, nor should it be. It is, first and foremost, a learned society. It is not a professional society: it does not award vocational accreditation to its members. It is not an advocacy group: we do not have the organisational frameworks in place that would allow such activity, and past AGMs have shown that many of its members share a deep concern about it trying to have such a role as its primary function. In any case, other groups can do that better than us (eg, the Australian Conservation Foundation).

As a learned society, the greatest strength of the ASL lies in its membership being the single largest grouping of professional scientists undertaking independent research on the ecology of Australian inland waters. Most ASL members attend its annual scientific meeting because they want to hear what other researchers are doing, both via the formal Congress presentations and during informal, after-hours rendezvous. They will be increasingly alienated should the Congresses degenerate further into policy-driven talk fests. If this occurs, they will present their work at other venues, such as meetings of the Australasian Society for Phycology and Aquatic Botany or the Ecological Society of Australia, rather than at ASL congresses. Linked with ours being a learned society is the nourishment we give to student development, indicated by our awarding three student prizes at each Congress, as well as providing a uniquely supportive yet critical environment for students to present their findings.

Ironically, it is this presentation of high-class science (from both older researchers and students) that is also most attractive to natural-resource managers: they come to our Congresses not to listen to policy or mere administrative matters (with which they get bombarded every day) but to hear about the latest developments in our science and meet with the key practitioners and form collaborative links with them. If we, as a Society, are dinkum about improving the translation of our research into better management, our foremost activity should be to foster this linkage between scientists and managers. This is best done by ensuring that the Congresses are venues where excellent science is portrayed and discussed.

It was gratifying to see a number of senior managers at the Darwin meeting (eg, Pat Feehan of Goulburn-Murray Water), staff from various consulting groups that are directly involved in the management of aquatic systems (eg, Chris Gippel of Fluvial Systems, and Michael Shirley and Lien Sim from Sinclair Knight Merz), as well as people from the private sector (eg, Tony Sharley of Banrock Station Wine and Wetland Centre). Of course, we should not forget that committed group of existing managers and staff in government agencies who regularly attend ASL congresses (eg, Paul Wettin and Monica Muschal of DLWC, to name just two). But we could do much better in attracting non-researchers to our meetings. I would love to see staff from, for example, Parks Victoria, the Victorian EPA and the Department of Natural Resources and Environment, attend the next ASL Congress, and the one after that, and the one after that. Then we would really be communicating our understanding of aquatic systems to a broader audience.

The ASL is large and mature enough for it to support a variety of viewpoints, and there is certainly a place for well-argued, management-orientated discussions in its Congresses. The opening speech at the Darwin meeting, by Gerry Wood (Litchfield Shire Council), was more than informative: it was inspirational. The sessions on the Snowy River could have been made extremely appropriate, had the topic been placed more effectively in a political framework. After all, a state government fell largely because of this issue. Whether we need to know all about the administrative trivia and plethora of policies associated with it is another matter. In contrast, it certainly behoves limnological researchers to be exposed to recent policy developments, such as water trading legislation. But the key aspect that binds all these issues together in an ASL Congress is the science of limnology, whether it be undertaken by researchers in universities, CRCs, the CSIRO, government departments or, increasingly, private enterprise.

Our production and circulation of Policy Documents (eg, on wetlands, and dryland rivers) is to be commended. Under certain conditions, the Society is also well placed to voice its concern about specific limnological and conservation issues: the endangered status of the subterranean aquatic biota, as outlined at the Darwin Congress by Bill Humphreys from the WA Museum, is perhaps a good case in point. But I would be very concerned if we were to shoot off proclaimations on aquatic managagement at every Congress, and a number of calls were uttered for these very declarations at the Darwin meeting. It is also disappointing that so few members have seen fit to put forward their names as specialists, listed at the back of each Newsletter, to whom managers and consultants can turn should they wish to be more informed about a particular limnological issue. How can "outsiders" know of the expertise in the Society, and who to contact to gain access to that expertise, unless this listing is done? The death, seemingly by neglect, of the ASL Bibliographic Database, as reported by Russ Shiel in a recent Newsletter, is also saddening, as it was a resource to which all could turn to locate published information on Australian aquatic systems.

So I suggest that, rather than paddling further up the blind creek of increased advocacy, the Society should reconsider its direction. Undoubtedly, many of the changes to the Society that have occurred over the past decade have been admirable, and it would be remiss of us to retreat into a scientific ghetto and not use our knowledge and skills to benefit the management of the country's aquatic resources. The best way to ensure the use of our knowledge is to provide a reason for managers and consultants to attend our meetings. And this is best done by ensuring that science is the highlight of the Congresses, not the dead weights of managerialism, administration and policy.

Paul I Boon
Victoria University, Melbourne

COTILLEO

MURDOCH UNIVERSITY, ENVIRONMENTAL SCIENCE

We have recently been invaded by **Leon Barmuta** who arrived for study leave late July, whereupon many of us promptly went AWOL attending the INTECOL Conference in Quebec, Canada. Despite that he assures us he has been doing wild exciting stuff, discussing boundary layers with **Jenny Davis** and alas we lose him early September for NZ I think. During the little OS foray **Jane Chambers** took a detour to the Wetlands Centre in London - an excellent example of a created wetland and educational experience for the public, anyone interested in this aspect of wetlands might contact Kevin Peberdy there. Back at the ranch the Marine and Freshwater Research Lab (MAFRL) has recruited a new chemist **Jamie Woodward** to run the new Varian Vista ICP extending the lab's capabilities to heavy metal analysis of sediment and biota, particularly low levels of arsenic and mercury. Jamie's first task is to gain NATA accreditation for the ICP methods. .**Leanne Hartley** is right into her Honours on a baseline study of 27 coastal wetlands in the south west looking how invertebrate community composition is related to environmental parameters of wetlands. **Karen Sutcliffe** is similarly dynamic in her PhD study of the distributions, habitat requirements and conservation status of freshwater insects in the south west. **Juan Chen** is just starting her PhD on the rehabilitation of eutrophic wetlands using Phoslock (a remedial clay that binds phosphorus) and its possible impact on wetland ecosystems.

From: **Jane Chambers**

MURDOCH UNIVERSITY FISH RESEARCH GROUP

The last year has seen the Fish Group working on various species of marine and freshwater fish and crustaceans from Broome to Esperance. **Howard Gill** and **David Morgan** have been working on a project detailing various aspects of the biology of a number of freshwater species, the impacts of introduced species and are mapping the distribution of fish in 1300 sites between Esperance and the Murchison River. **Andrew Chapman** is commencing a Mphil on the biology the spotted minnow in the Phillips and Oldfield Rivers. **Stephen Beatty** has completed his Honours on the biology and ecological role of marron. **Gavin Sarre** is conducting inland aquaculture trials on black bream and is looking at their biology in the Blackwood River, with the aim of restocking. **Margaret Platell** and **Glen Young** are heavily involved in the teaching and development of a new course being offered at Murdoch entitled *Fish and Fisheries Biology*. **Glen**, who recently submitted his PhD, is also looking at the inshore fish fauna in the Pilbara and Kimberley. **Simon de Lestang** is writing up his PhD on the biology of different populations of blue manna crabs from Shark Bay to Augusta, and is also doing some work with **Gavin** on the black bream. **Dave Fairclough** (biology of four species of tuskfish) and **William White** are also working in Shark Bay. **William** is chasing sharks (and vice versa). **Mat Pember** is embarking on the PhD trail (salmon biology) and is working with **Glen** in the north. **Alex Hesp** is well into a PhD on the biology of silver and yellowfin bream. **Fiona Valesini** and **Alan Kendrick** have moved to our new premises at Fremantle Maritime Centre, and **Fiona** is examining the relationships of beach habitat types and fish communities, while **Alan** and is in the latter stages of his PhD on the biology of seahorses in Cockburn Sound.

From: **David Morgan**

CENTRE FOR ECOSYSTEM MANAGEMENT, EDITH COWAN UNIVERSITY

Here a brief glimpse at what is going on at ECU in terms of wetland research. **Mark Lund** and his group (**Sarah Brown** and **Glen Lee**) have been occupied with trying to make sense of the midge problem at Lake Joondalup, the effectiveness of constructed wetlands in removing nutrients from stormwater runoff, and bacterial strategies for increasing pH in acidic mine voids at Collie. **Mark Lund** and **Ray Froend** are also doing research on the impacts of the Stage 2 lower Ord River irrigation scheme using nutrient mass balances. **Stewart Hawkins** recently submitted his Honours thesis on biofilm composition and function in stormwater constructed wetlands, while PhD student **Surasithe Khwanboonbumpen** is investigating means of improving waste water quality in developing countries by using natural wetland processes in artificial wetlands, and for wetland restoration.

Ray Froend, Pierre Horwitz and **Bea Sommer** have been producing conceptual model after conceptual model of the responses of aquatic vegetation and the carbon cycle to changes in water quality and quantity. This is part of a collaborative project between Murdoch University, CWR and ECU funded by the Estuarine Research Foundation. **Ray**, together with Peter Davies and Andrew Storrey from UWA, (and in conjunction with EA) are looking at functional impacts of altered water regimes in the lower Ord, in particular on food webs, and the relative importance of different plant groups as sources of nutrients. As part of the Salinity Action Plan **Ray** is continuing to reassess the long-term monitoring of wheatbelt wetlands in the southwest in terms of vegetation response to salinity and rising water tables. **Ray** and his team are also involved in a range of consultancies, including research at Lake Toolibin, the Gnangara Mound, the Vasse estuary, Collie River pools and Gingin. **Neil Pettit** is a happy man, having recently submitted his PhD thesis on factors affecting the recruitment of riparian vegetation in the Blackwood and Ord Rivers. Staying on the vegetation side of things, Honours student **Robyn Loomes** is classifying Swan Coastal Plain wetland plants into 'hydro-types' based on their hydrological distributions, while **Hayley Valentine**, also an Honours student, is using ^{13}C isotope as a measure of water use efficiency in wetland plants. PhD candidate **Gary Ogden** is researching factors affecting the recruitment of wetland trees in wetlands with highly variable water and salinity regimes.

ASL outgoing president **Pierre Horwitz** has been temporarily 'relieved' from his duties at the centre since he was seconded to the Faculty where he will be working on the development of transdisciplinary Ecosystem Health initiatives. His supervisory commitments remain, however: **Darren Ryder**, currently employed as a post-doc at CSU in Wagga Wagga, is in the throes of completing the last chapter of his PhD thesis on the accumulation of peat in wetlands. Meanwhile **Jean Benier** is nearing the completion of his Masters thesis on the role of farm dams in harbouring relict aquatic invertebrate fauna. **Kelli O'Neil** is on the brink of discovering what caused Lake Jandabup to become acidic. **Pierre** and his group are also involved in the Gnangara Mound aquatic macroinvertebrate monitoring program, the aim of which is to assess the impact of groundwater extraction on the water quality and macroinvertebrates of the wetlands on the mound. **Eddie van Etten, Bea Sommer, Robyn Loomes** and **Charelle Harkins** recently visited the Big Bell mine site near Cue to conduct a post-impact study on the effects of discharging hyper-saline groundwater into Lake Austin.

From: **Bea Summer**

Department of Land & Water Conservation

Bruce promises a more substantial contribution next time, but offers this little gem in the mean time.

Q. How many ASL members does it take to change a light bulb.
A. Forget it, the ASL never changes anything.

From: **Bruce Chessman**

Murray-Darling Freshwater Research Centre

John Hawking and Gunther Theischinger spent last week in the field with a smash and grab raid along the east coast from Sydney to Rockhampton. They were trying to collect the last few dragonfly larvae that they need for their forth coming field guide to the adults and larvae from Australia. John also collected pyralid larvae for the much awaited key – which should eventuate at the next Taxonomy Workshop.

Robert Cook has handed over the Paper Mill project to **Melanie Pearson**, while he pursues a leadership role for the Campaspe environmental flows project. In addition to the Paper Mill work, **Melanie Pearson** is continuing work on the MDBC project.

John Hawking and **Melanie Pearson** attended the ASL conference in Darwin, John presented a paper on pyralid life history and Mel presented results from honours research from La Trobe Uni. Pre Conference, **John Hawking** had a two week tour of Kakadu sampling for (you guessed it) pyralids and dragonflies, with **Chris Humphrey** and **Fred Bouckaert**.

The second half of this year again brings students from La Trobe University for work placements. **Melina Entwistle** is working on Baetidae and its distribution, while **Megan Clarkson** is analysing the shrimp data collected from the Campaspe project.

Helen Gigney, Garth Watson and **Trish Bowen** have gone from drought to floods. The riverine-floodplain interactions project which has suffered from lack of water for so many years has now had a flood down both the Edwards and Murrumbidgee Rivers. Over a 1000 zooplankton and water quality samples have been collected form both floods which will be a substantial dataset to work with. Unfortunately it is still in sample jars.

Russ Shiel is shackled to a microscope in Adelaide sifting all the wee critters from **Jim Puckridge** et al's ARIDFLO project samples...a remarkable diversity of small denizens apparently takes advantage of the occasional flooding of the rivers which (sometimes!) reach Lake Eyre. Perhaps this is what the birds and fish have known for aeons?? The ARIDFLO field team has been backo' Birdsville for August...a profusion of new samples is anticipated.'

From: **Daryl Nielsen**

NSW EPA

Olympic limnology:

The Olympic venues with inland waters being monitored are the Homebush Bay site and the Penrith Lakes venue.

Penrith Lakes was a previous sand and gravel quarry, now used for flood control and recreation. The Olympic Coordination Authority (OCA) has a memorandum-of-understanding with Penrith Lakes Development Scheme regarding long term water management. OCA monitor water quality and have undertaken a fish survey. Over 50,000 aquatic plants were provided in 1996 for water quality improvement and ecosystem diversity.

The Homebush Bay Olympic site has been affected by previous landuse (dumping, agricultural use, industry, naval use) and landform modifications. After winning the Olympic Games, money was provided to remediate the land and monitor the environment. Waste was combined into designated mounds, Haslams Creek re-aligned and wetlands uncovered. Monitoring included soil and water contamination and some ecological studies to determine effects of civil works.

Since remediation has been completed, on-going monitoring includes surface water quality monitoring to determine the quality for different uses (irrigation, aesthetics, habitat, flood management), leachate chemical monitoring and limited biota monitoring (frogs, benthos, saltmarsh condition, birds). Most of this monitoring is conducted for due diligence or to meet licence conditions.

A budget for an Enhanced Remediation Strategy was also provided to the OCA to leave a legacy after the Games. This includes streamlining the monitoring and management program for the future, providing education and tools for both managers and the wider community. Further monitoring that has been put in place in this program include toxicity testing to both provide information on bioavailability of contaminants and a triad approach to ecological monitoring, a fish bioaccumulation study and a bioremediation study. Reference sites within Sydney Harbour have also been included in the monitoring programs.

Past reports are also being reviewed to build up a picture of overall site condition. The Homebush Bay site has over 100 hectares of waterways and wetlands to manage and we aim to leave a management plan based on sound science.

From: **Edwina Laginestra and Gillian Dunkerley**

UNIVERSITY OF NEW ENGLAND, ARMIDALE

As flurries of snow speckle the tablelands, limnos at UNE huddle closer to their heaters or plan work down on the coast. **Andrew Boulton** is continuing work on gradients in hyporheic nutrients and invertebrates in a stream (Rocky River) choked with sand from gold-mining in the mid-1800s and then substantial erosion since then (an estimated 70 000 tonnes of sand/annum). A Masters student **Sebastien Depauw** from the University of Renne in Brittany has been preparing a catchment management plan of Rocky River as part of his 4-month internship in Australia and has enriched the ISC with a measure of "hyporheic efficiency" as well as enriching UNE with equine feats and showing the local lads how to surf. Meanwhile PhD student **Marcus Finn**, cosupervised by **Bruce Chessman** and **Andrew Boulton**, is finalising his methods for assessing effects of 'artificial droughts' on unregulated streams; a project being conducted in conjunction with the DLWC in Armidale. Braving the elements on the Hunter River (a bit hard to take after Darwin last month!) is **Peter Hancock** as he samples subsurface invertebrates, water chemistry and microbial activity along gravel bar and riffle hyporheic flowpaths at 8-10 sites to build up a picture of responses to variations in flows. **David Jenkins** is also doing a Masters project on the subsurface fauna of the Hunter, focusing on fine-scale distribution patterns at a few sites. **Colleen Watts** is in the final throes of writing up her opus on phosphorus dynamics in two reservoirs while **Sue Botting**, also in the home stretch of her PhD, wrestles with S-Plus and looks for the ideal model to extract every last quantum of information from her nutrient-diffusing substrata project. And our NZ correspondent **Kim Jenkins**, in between fleeting visits to Oz, tantalises Andrew with stories of zooplankton dynamics in sediments of lab pots, field microcosms, and - gasp - real floodplain lakes (stay tuned to know how well her 4L pots mimic open floodplain lakes).

Leah Watson is doing her Honours project on the effects of antimony mining on aquatic invertebrates and microbial activity in a river draining Hillgrove mine near Armidale while **Noel Robson** continues his lonely quest for the freshwater sponge of his dreams. **Helena Malawkin** just finished her work on camphor laurel leaf decomposition and **Alanna Marcham** is analysing her Hons data on hyporheic faunal responses to floods in a coastal river.

From **Andrew Boulton**

UNIVERSITY OF NEWCASTLE

Brian Timms is continuing his long term studies on the Paroo (13th year, 66th trip coming up). A recent focus of the work (in combination with **Andrew McDougall**, Chief Ranger at Currawinya National Park) has been looking at the influence of high turbidity on waterbird diversity. This year with the good rains maintaining claypans well beyond their normal life of 2-3 months I am focusing on the change in their distinctive characteristics as they become more like freshwater lakes, rather than short-lived turbid little puddles.

From **Brian Timms**

QUEENSLAND EPA (WATER RESOURCE ENVIRONMENTAL PLANNING)

There have ben a few changes since the last time I submitted anything from our group but we are soldiering on regardless. We've lost a number of team members to other sections of the EPA. Much of our work centres around the Water Resource Environmental Planning (WAMP) process which is used in Queensland to determine environmental flows for river systems. A number of the draft plans and technical documents produced as a consequence of the process have now been released for review and a considerable proportion of our team is involved in auditing these documents. **Dane Moulton**, **John Platten**, **Susan Cunningham**, **Bill Macfarlane** and **Darren Fielder** have been undertaking most of this work, with some input from **Ngaire Phillips, John Bennett** and **Terry Loos**.

We are currently working on two LWRRDC funded projects. One involves a review of existing methods for assessing conservation values of rivers and instruments for protecting rivers. This project is nearing completion and has been largely undertaken by Ngaire. We have also kicked off a project entitled "Environmental Planning and Evaluation Guidelines for Rivers and Floodplains", which will involve developing guidelines for assessing conservation value, defining river sustainability, defining conservation planning processes and evaluating development options. A series of workshops is proposed to introduce the guidelines and obtain feedback in each of the major cities in October/November. **John Bennett** is project manager and, along with **Norrie Sanders (Montgomery Watson)**, **Ngaire Phillips** and **Dane Moulton**, will be developing these guidelines.

The team is finally about to do some field work in a collaborative effort with members of the DNR Biological Monitoring and State of the Rivers teams. A trial of methods for defining conservation value of rivers was undertaken through a desktop analysis of the Burnett River catchment in central Queensland, largely by **Ngaire Phillips** and **Fiona Redfern**. At the end of September we will be going into the field to (hopefully) validate our desktop findings and will also be tesing hypotheses relating to habitat/fauna relationships in conjunction with the DNR group.

That's about it for the moment.

From **Ngaire Phillips**

FRESHWATER BIOLOGICAL MONITORING GROUP – QUEENSLAND DEPARTMENT OF NATURAL RESOURCES

Since the last bulletin our group has been a very busy little bunch with many exciting developments both at work and at home. The June 2000 milestone report to EA has been completed and **Diane Conrick** assures us that we are on track to finish everything by the end of the year (keeping everyone on track is the hard bit). There is now a light at the end of the tunnel!

Several members of the group are involved in new projects that have recently been initiated or will be in the near future. These include **Chris Marshall** and **Jon Marshall** (recently termed the **Leyland Brothers**) with the South East Queensland DIBM3 project, which is looking at aquatic indicators for ecological monitoring in SE Qld, **Chris Marshall** with a joint Forestry project

comparing the fauna of streams in native vegetation vs pine plantations, and a joint QEPA project ground-truthing desktop-derived river types and conservation values for the Burnett River catchment.

Neil Tripodi is starting a PhD with the National Research Centre for Environmental Toxicology and will be conducting research involving the impacts of pulse-exposures of non-persistent pesticides on aquatic ecosystems, to assist with developing a risk assessment methodology to more accurately assess the ecological impacts of agricultural chemicals. **Chris Marshall** and **Glenn McGregor** have also become co-supervisors of a QUT honours student looking at the importance of woody debris in sub-tropical lowland streams.

Interpreting field sheets has kept **Chris Thomson** and **Neil** busy for several months. **Chris** has earned some time out of the office for good behaviour and will be participating in a CSIRO field day and giving a Water Watch talk later this month.

We have recently finished a very fat document detailing the work on our WAMP project defining links between the ecological condition of streams and their flow characteristics. The work was presented at a CRCFE Review, which resulted in favourable comments of our techniques (we are all walking around with swelled heads at the moment). **Pete Negus** has been finalising edits on this report.

Bernie Cockayne has been sending selected bugs to taxonomic experts for species level identifications. Returned specimens are being catalogued into our new Qld aquatic macroinvertebrate voucher collection.

Our illustrious leader **Satish Choy** has taken on higher duties in the Water Monitoring group as Acting Principal Engineer (some may think this is a step backwards). However, he has temporarily ditched his increasingly heavy workload of meetings, technical advisory panels, etc after being awarded a Raffles Museum Fellowship to collaborate with the National University of Singapore on his adored freshwater shrimp (sounds a bit like G&Ts on a raffeter lounge).

Glenn McGregor (in collaboration with Dr Larelle Fabbro, Central Queensland University) has begun working on a guide to the identification of planktic Chroococcales (Cyanoprokaryota) for presentation at the third Australian Algal Workshop being held in Brisbane on July 23-25, 2000. Any contributions in the form of records, micrographs, illustrations, etc. are most welcome.

In between all the time-consuming work related activities, **Chris Marshall** and **Michelle Jenkins** found time to fit in attendance at a wedding (their own that is) with a week of honeymooning with their two Great Danes tagging along to keep them company.

Satish, Jon, Bernie and **Pete (Choy's Boys,** as they are locally known) attended and presented at the ASL conference in Darwin. We would like to congratulate **Bernie** on getting an honourable mention in the Lucky Door Prize for the V-D (velocity-depth) ratio for habitat assessment. **Jon**, who was appointed the new Queensland Regional Executive Member, is starting the ASL Queensland Pub Seminar Nights in Brisbane (the details will be sent out soon). **Jon** has also mentioned that he is on the final straight for finishing his PhD (which was also mentioned several years ago).

Finally, as the footy season has come to a close we have to mention that **Diane** has taken out the inaugural Rocklea AFL footy tipping competition (it seems ex-Victorians never forget).

Cheers from us at Rocklea.

Correspondent – **Peter Negus**

WSL Consultants, Melbourne

The macroinvertebrate department at WSL Consultants has been busier than usual over the last few months. Having moved to the new lab (occupied by **Kylie Swingler** and the three Musketeers, **Damian Smith**, **Patrick Maiden** and **Danny Vertessy**) we have been able to knuckle down to some serious bug work. Most notably, WSL completed the sample analysis for **Bruce Chessman** and **Simon Mitrovic** at the NSW Department of Land and Water Conservation Environmental Flows project - a large, wide ranging project requiring genus level ID's of macro's from rivers throughout NSW. We were fortunate to have **Julie-Anne Harty** (NSW) and **Marc Seifert** (QLD) with us for the duration of that project. Julie-Anne has since commenced a PhD on riparian restoration in Gosford and Marc has been the envy of the group, moving to Cairns to work for NRA consultants as the principal aquatic biologist.

Danny Vertessy is due to present a seminar on biological monitoring for wastewater treatment plants at the AWWAO conference in Warnambool. The primary focus of the seminar is to make treatment plant operators aware of the EPA requirements for monitoring in receiving waterways. His seminar will start the conference and will keenly listened to. He's looking forward to hanging out with a bunch of wastewater engineers and talking crap, I bet!

We welcomed **David Ruebhart** to the biology group in July. David's consulting experience with alage and study on diatoms has enabled us to keep up our phytoplankton analyisis **while Karen Simonsen** enjoys motherhood. Congratulations to Karen and Shaun - we're looking forward to meeting baby Katherine.

We are presently preparing a number of large tenders for wastewater treatment plant bioassessment. Having just last week attended the Australian Water Association Annual Dinner, the Biology group is looking forward to some maintaining strong links with these industries and staying heavily involved in setting the standards of biomonitoring.

From **Patrick Maiden**

Centre for Natural Resources, NSW Dept. of Land and Water Conservation, University of New England.

There is plenty of limnological action up here in the highlands. We are undertaking a wide range of activities involving salt, water regimes, rivers, wetlands and associated biota. **Margaret Brock, Michael Healey, Doug Westhorpe, Ken Harris, Bronwen Jones, Meredith Royal, Nirvana Searle and Irene Jarosinski** are starting experiments to quantify the relationship between increasing salinity and the structure of biological communities in wetlands that develop from dormant zooplankton eggs and aquatic plant seeds. This work is being undertaken in conjunction with **Daryl Nielsen** from the MDFRC, Albury. Margaret, Michael, Ken and Meredith are continuing work on seed banks and water regimes at the UNE experimental wetlands with some additional experiments on biota. Michael is putting the finishing touches to a project "Factors controlling frog diversity and abundance in the riparian zone of the Murrumbidgee River" with **Amy Jansen** from Charles Sturt University in Wagga. Michael is also examining how water regimes are influencing frog communities while **Sue Botting** is investigating macroinvertebrate community response. Sue, **Katherine Crossle** and **Laurie O'Donnel** from the UNE Botany

department have helped us immensely with sampling at the experimental wetlands and aquatic plant seedling identification.

Meredith and Irene are also working with Marcus Finn, **Bruce Chessman** (Principal Aquatic Ecologist, DLWC) and **Andrew Boulton** on the biological response to low flow & drying in stony & sandy bed streams. Bronwen has been involved with IMEF studies examining low flow characteristics in the far west of NSW. She will also be involved with the assessment of environmental flow allocation methodologies in some coastal catchments. **Peter Serov** and **Jamie Foster** continue their work assessing High Conservation Value of eastern non-regulated catchments and sub-catchments.

from **Michael Healey**

CENTRE FOR CATCHMENT AND IN-STREAM RESEARCH, GRIFFITH UNIVERSITY, BRISBANE

Heather Proctor is relieved to report that she's finished identifying DNR water mites to genus – approximately 7000 of the wee beasties. There are several new generic records for Queensland and a few rarities have surfaced, including the second specimen of *Pollicipalpus* ever to be collected in Australia.

Angela Arthington, **Steve Mackay**, and **Mark Kennard** have been kept busy on technical advisory panels working on water action management plans (WAMP's) for the Pioneer and Burnett River catchments.

Welcome to **Christie Fellows** who recently arrived from University of New Mexico where she did her PhD on "Ecosystem metabolism and nitrate retention in headwater streams." **Christie** is doing her post-doc on N & C cycling in riparian zones with **Stuart Bunn** and **Heather Hunter** (DNR).

Fiona Balcombe is within days of completing her "bug" identifications, and expects to be permanently attached to her PC for the rest of the year for PhD write-up. **Claire McKenny** has almost completed her first set of field trips to the Upper Brisbane and Mary River catchments. **Claire** has been measuring algal production *in situ*, and collecting invertebrate and algal samples from cobble habitats to investigate relationships between invertebrate grazer guild structure, algal production and composition. **Andrea Schmitt** is almost halfway through field sampling, and is currently running a laboratory experiment. This investigates the effect of fertilization on growth rates and amino acid composition in *Potomogeton* and *Vallisneria*.

From **Stephen (Harry) Balcombe**

Sinclair Knight Merz, Melbourne

The Aquatic Ecology team from Sinclair Knight Merz has been managing to keep busy recently although it has been a constant stream of new arrivals and change. **Sam Hannon** and **Michael Shirley** spent a week at Menindee Lakes recently with the team from the CRCFE/MDFRC Mildura Lab (Ben, Iain, Brendan and Oliver) and MAFRI (Paul and Andrew) as part of the Aquatic Fauna study at the lakes. **Rod Hardwick** and team have finished the Index of Stream Condition (ISC) assessment at beautiful Laverton Creek in Melbourne's industrial western region and he is now working in a more scenic area undertaking an assessment of a proposed development at Lake Nagambie. **Lien Sim**, on returning from Darwin, has recently finished` taming the local Landcare Group at Kialla Lakes with **Michael** and is champing at the bit to get to Perth to start a project on a series of wetlands with out Perth office. Environmental flows are keeping **Alieta Donald, Sam** and **Michael** busy, working with a CRCFE, Lance Lloyd and ARI Freshwater Ecology developing a statewide protocol for Victoria and completing assessments for the Wimmera, Avoca and Glenelg Rivers. **Tanya Wansbrough** is settling in after recently joining the team from Sydney Water, and has been teaching our tame geomorphologist **Bruce Abernethy** about the need for community consultation in some of our projects. Another new staff member, **Catherine Sandercock**, has been making good headway through the National State of the Environment Report for Inland Waters. **Kylie Lewin**, who started in the last week or so, has been finding her feet in a blur of new names and faces, and **Simon Treadwell** just continues to pop in casually to do a bit of productive work here and there when he gets bored with his thesis. **Paul Boon** continues to work across a number of new and existing projects from SKM's annexe at Victoria University. **Lisa Menhenett** from our Mildura office, having completed the wetland operational plans in the Mallee region with **Michael**, now is moving to Tatura to work with **Kym Dyson** at SKM Tatura.

By **Michael Shirley**

Freshwater Ecology, Arthur Rylah Institute, Department of Natural Resources and Environment

A myriad of diverse and applied research projects continue in Freshwater Ecology of the Arthur Rylah Institute, DNRE encompassing fish ecology, environmental flows, pest species, biological monitoring and threatened species assessments. The Agriculture, Fisheries and Forestry Australia (AFFA) funded projects are in full swing with a mix of field and aquarium-based work across the different projects. **Tom Ryan** has been busy with aquarium experiments. These have included temperature trials conducted on the hatching, survival, growth, preference and fast-start performance of native fish species. Tom and his team are also monitoring temperatures in the Goulburn, Mitta Mitta and Murray Rivers for impacts of cold hypolimnic water releases.

Ivor Stuart and **Matt Jones** continue to investigate the point source management of carp populations within the extensive Barmah/Millewa wetlands, skilfully dodging tornadoes, falling trees and large hail in the process! Over the last 18 months the project has gathered data on adult carp movements at Barmah, particularly during the spawning season. Radio telemetry of 45 large fish has suggested that carp occupy a home snag in the Murray River, but are also highly mobile, entering flooded lakes and wetlands during high flows. Some of these fish have made return journeys to Barmah of up to 320 km and the largest distance moved by two fish was 600 km downstream. This data, intensive sampling and collection of young-of-the-year carp from the

Barmah floodplain suggests the area is an important spawning and recruitment zone. Hence a greater level of control of carp populations in the mid-Murray may be possible through management of river flows, floodplain inundation and reducing access for carp to the Barmah wetlands.

The conservation genetics project for Murray-Darling Fish. Trout Cod *Maccullochella macquariensis*, Murray Cod *Maccullochella peelii peelii* and Silver Perch *Bidyanus bidyanus* has commenced with **Andrew Bearlin** at he helm. The findings of the project will enable "best practices" (broodfish collection, management and turn-over, mating procedures, mixing of eggs, larvae or juveniles, stocking procedures etc.) to be recommended to hatchery operators to ensure the maintenance of genetic variation in all populations. Variation in the gene pool is essential for fitness, and provides the basis for evolution of populations and species. Maximum genetic variation in parental stocks is also of vital importance as a basis for artificial selection programs in aquaculture.

Non-destructive techniques (e.g. sampling of small sections of fin tissue from individual fish) will be used to evaluate the population genetics of each species in natural, wild populations, stocked populations and hatcheries. Additionally, the taxonomic relationships of Silver Perch, Welch's grunter, their hybrids, and Barcoo Grunter will be examined. Loss of genetic integrity in one or more of these species could restrict the success of future stocking and selection programs, and place the future of the species at risk.

The environmental flow group has recently completed the environmental flow component for the Moorabool and Kiewa River Streamflow Management Plans. **Brenton Zampatti** has decided to check flows in Europe for a few months, flows of red wine and European ale that is! **Lousie Grgat** has been busy with data entry and habitat availability simulations using RHABSM. **Paul Close** has been involved in environmental flow assessments of Seven Creeks (near Euroa, Victoria) as well as fish assessments of Melbourne metropolitan streams. **Wayne Koster** has recently completed a study on the aquatic fauna of Mullum Mullum Creek in eastern Melbourne, prior to the extension of the Eastern Freeway.

The aquatic invertebrate team have recently completed biological monitoring of three catchments in the Melbourne Metropolitan area for Melbourne Water Corporation. This involved the collection and analysis of heavy metal, nutrient and macroinvertebrate data, along with management recommendations for the three catchments. **Di Crowther** and **Mike Nicol** are threatening never to go near Kororoit Creek again after finding a dead dog and scooping up numerous syringes. **Mike Nicol, Ruth Lennie** and **Phil Papas** have recently completed 17 listings for rivers in Victoria to be included in the next edition of the National Wetlands Directory produced by Environment Australia, keep your eye out for the release. **Phil Papas** and **Di Crowther** together with **Ben Kefford** (now undertaking a PhD at RMIT University) and **Dr. Dayanthi Nugegoda** (RMIT) have commenced a LWRRDC-funded project examining a method for predicting the loss of aquatic biodiversity with increases in stream salinity. Aquarium and field trials and experiments will begin shortly.

The testing and development of the National River Restoration Framework (RRF), a LWRRDC-funded project, is in its final stages. The National River Restoration Framework (RRF) outlines a best practice procedure to follow to restore rivers throughout Australia The RRF provides a set of guiding principles, outlines tools, and includes river restoration case studies. Site visits and interviewing river managers about particular river restoration projects in New South Wales, Western Australia, Queensland and South Australia have been conducted to identify regional, social, economic, skill level, or other relevant characteristics that may influence the successful pplication of the RRF. The national visits and interviews have been a highlight of the project thus far for **Belinda Cant**, one of the principal project leaders. Preliminary findings indicate that the RRF will be a useful guide to project planning in regions where waterway

managers and community groups have little access to natural resource management and waterway management planning processes.

On a lighter note, one of the highlights for many staff, was a recent swim in a heated pool...in waders. This was conducted for OH&S reasons, to determine if staff were able to successfully swim fully clothed in waders should this occur in a field situation. All staff passed this test and the pool staff were entertained in the process.

In closing, the Arthur Rylah Institute, which includes Freshwater Ecology, Flora Research and Fauna Research, will be holding an information day for tertiary staff/students in November, projects with opportunities for student involvement will be highlighted. Info will be mailed out to Victorian institutions soon and a notice will be placed on the ASL email list. Stay tuned for a full general-admission open day in April 2001.

by **Phil Papas**

Murray Darling Freshwater Research Centre – Lower Basin Laboratory Mildura

Two recent additions to the staff of the Mildura Lab include **Oliver Scholz** and **Bernard McCarthy**. Oliver is back working full time on the Menindee Lakes and Ephemeral Deflation Basin Lakes projects and Bernard has been appointed temporarily to finish writing a few reports and is doing well. PhD student **Brendan Ebner** has just launched into his final fish diet experiments and **Cathy Francis** has returned to Adelaide to put the finishing touches to her thesis. Whilst all this feverish activity has been going on **Ben Gawne** attended ASL in Darwin and INTECOL in Quebec City, demonstrating inordinate faith in laboratory staff.

By **Ben Gawne** and **Oliver Schultz**

Australian Water Quality Centre

Bolivar South Australia

Daria Schulze represented the Aquatic Ecology and Biomonitoring sub-unit at ASL. In Darwin she presented a poster for **Paul McEvoy** & **Adrian Pinder** on "Aquatic Worms of South Australia". **Sam Wade** has completed running a practical course based on the AusRivAS model for the 3rd Year students at the University of Adelaide.

The whole team worked flat out to finish samples for NSW DLWC by a very tight deadline and is continuing the processing of the 1998 MRH samples at the same furious pace.

Winter in South Australia is made pleasant by the release of numerous new vintages.

Peter Schultz

National Parks and Wildlife South Australia

Department of Environment and Heritage.

Rob Walsh has been busy over the last year. He was appointed as Senior Scientist, Wetlands Management, and has been busy developing a policy (well trying to) dealing with the conservation of wetlands in South Australia. In addition to developing guidelines for wetland management, he has also been busy contributing knowledge for management of water catchments and environmental flows, coordinating surveys identifying the extent, nature and condition of wetlands in South Australia, and busy establishing liaison with non-governmental groups specialising in wetland management. – phew !

He was joined by **Russell Seaman** in mid August of this year. Russell has commenced employment to develop a data base of the states wetlands and to collate existing information into it. Concentrating at first on Eyre Peninsula, then moving to the Northern Agricultural District and Yorke Peninsula, and finally Kangaroo Island.

from

Rob Walsh.

eriss WETLANDER NEWS

Despite the best intent we did not send anyone to the Quebec wetland jamboree. I think the 10 presentations at ASL2000 were enough for our small institute, especially as this came immediately after a visit from the UNESCO scientific panel (with the now Past ASL President, **Pierre**, attached as a representative for IUCN) investigating further aspects of the Kakadu and uranium issue. The panel will report soon. The visit has sparked a lot of talk about ecosystem approaches and the ecological context of various actual and potential impacts impacts on Kakadu's freshwater wetlands, and has enabled **Max** to again float the climate change scenario that ends up with saline wetlands. This will challenge **Bob Pidgeon**'s fascinating fish kill scenario!

We have continued our interest in training and tropical wetlands and managed to **send Michael Storrs** to Tram Chim National Park, Viet Nam to assist in developing a management strategy for the dreaded *Mimosa pigra*. This was linked with a wetland management study tour for six wetland managers from Viet Nam, who visited ***eriss*** and Kakadu National Park in April 2000. Our visitors enjoyed field trips and talks with various wetland experts, especially staff from Parks Australia North, and gave a very interesting slide show on issues affecting their wetlands in the Mekong Delta.

The big news is that **Max** has 'stopped' his international travelling (temporarily??!!) and now spends his time dreaming up more and more bureaucratic exercises for others. Others can now have the joys of treading lightly in the mires and murky swamps of the globe

As for me... I'm still receiving invoices from suppliers for the ASL2000 Congress in July, but with luck and a bit more effort, all the finances from the Congress should be wrapped up soon! Now I've turned my attention back the National Centre for Tropical Wetland Research (NCTWR), in which *eriss* is a partner, along with James Cook University, Northern Territory University, and the

University of Western Australia. The inaugural NCTWR Advisory Committee meeting is scheduled for 5 September, and the Board of Management will meet for the second time in Perth on 22 September The Advisory Committee consists of 10 individuals representing government, non-government, recreational fishing, Aboriginal, mining and pastoral interests, and will meet annually to advise on the direction of NCTWR research and training activities. We look forward to working with them all over the next few years.

Wetland Ecology and Inventory Program

George Begg and **Ben Bayliss** recently spent a week in the Daly Basin of the Northern Territory, ground-truthing for an *Inventory and risk assessment of water dependent ecosystems in the Daly Basin*. The primary objectives of the project are to:

1. Map (and store in a GIS format) the area, location and extent of a range of water dependent ecosystems in the Daly basin.

2. Establish threats to these ecosystems from forecast and existing water use and land management practices and overlay this information on the GIS-based map.

3. Identify which ecosystems are most at risk, and where possible provide an assessment of the extent of this risk.

Being a large area (size 20 000km^2) and underlain by limestone, combination of the 1:50 000 digitally mapped drainage data (from AUSLIG) and land unit / waterlogged soils data (from the NT Department of Lands, Planning and Environment) have been found to be a reliable source of information about the whereabouts of wetlands in the area.

Although the intergrading physical and biotic characteristics of wetlands make any classification scheme somewhat arbitrary, the ecosystems concerned are being classified using landform and hydroperiod as a basis along the lines advocated by Semeniuk (1987). Wherever possible the same basic terms (floodplains, rivers, creeks, damplands) are being used to distinguish between the systems concerned. In addition, because of their local significance the term 'billabong' has been incorporated and other aquatic habitats (eg springs, pools, waterholes, sinkholes, marshes, swamps) are being added as secondary units to broaden the applicability of the scheme.

The final report is expected to be available by March 2001.

Risk Identification and Assessment Program

The last few months have resulted in major progress on several research projects for the Risk Identification and Assessment group at ***criss***. Reporting on major projects by **Caroline Camilleri** as follows....

Anna Smith, our Honours student from RMIT, has been putting the refining touches to a rapid cladoceran feeding inhibition toxicity test protocol. This project follows on from previous work. Validation of this protocol is being done by investigating the toxicity of mining and sewage wastewaters using the feeding inhibition test, the 3 brood reproduction test, and the 48 hour immobilisation tests concurrently. The success of the new rapid feeding inhibition test will enable results to be obtained within 24 hours, as opposed to the other tests which take 3 to 6 days.

And in keeping with the toxicity test theme, a much needed compilation of all the toxicity testing protocols used and/or developed at ***criss*** is in the final stages of preparation. ***criss*** has been been

carrying out toxicity testing using local aquatic species from wetlands of the wet-dry tropics of northern Australia for over 10 years. During this time, testing protocols have been developed using aquatic plants and animals. Initially these protocols were developed to ensure the protection of wetlands and waterways downstream of a uranium mine, ie enabling a site-specific response to identify potential threats to the wetlands. With ever increasing identification of threats to Australian tropical wetlands, these protocols have subsequently been modified for use in a wide variety of applications. We now have available a broad suite of high quality testing protocols suitable for application not only in northern Australian wetlands, but also relevant to wetland issues extending into Asia and South America and Africa. Compilation of all the existing protocols (in use, under development, and redundant) is an extremely useful document, consolidating the high quality research carried out at this laboratory facility. It will also form a basis for ecotoxicology in tropical freshwaters, and will be an important reference source and training document.

Other projects nearing completion include; a cane toad risk assessment to determine what organisms and ecosystems will be at greatest risk with the arrival of the toad; preparation of a paper on the investigation of the hypothessi that Al-silicate complexation reduces Al bioavailability to the purple spotted gudgeon (results did not support this hypothesis, leading to the development of a new project); and a consultancy with CSIRO DET, carrying out toxicity acute toxicity testing of purple spotted gudgeon and cladocerans to an unidentified manufactured tailings liquor.

Biological Monitoring group

We welcome **Clint McCullough** who has joined ***eriss*** to undertake a PhD project in the ecological effects of magnesium sulphate, in Magela Creek, NT. Clint will examine the effects of this salt on benthic communities of macroinvertebrates and diatoms, by dosing pools with various concentrations of $MgSO_4$ after examining baseline conditions. His field work will be complemented by laboratory experiments to establish toxicity levels. These may be used to set release criteria for ERA.

Meanwhile, baseline data have now been collected for two years at Jabiluka, and a third year's data collection is being planned for the next Wet Season. The first year's data were collected **by Gael Davidson**, who is now working hard to complete her Honours thesis in the next few months. Bugs were also collected at the end of the Wet Season to monitor the effects of the Ranger mine in Magela Creek. Identification to the lowest taxonomic level cannot always be completed at ***eriss***, and taxonomic experts from around Australia assist us with this work.

Chris Humphrey, **Bob Pidgeon** and **Frederick Bouckaert** will join **David George** from the NT Department of Lands, Planning and Environment in a few weeks time to collect baseline information on hydrology, fauna and flora in the Upper Mann River district. The excursion will also aim to educate, and to collect information from traditional owners on land management issues, while trying to revitalise an interest in the area (caring for country).

Popnetting and channel billabong fish counting has now well and truly been completed, and the data are eagerly awaiting analysis and interpretation. The sampling procedures have been reviewed with regard to crocodile safety (!!), and soon a policy will be hammered out on this.
And that's all until next newsletter!

Compiled by **Abbie Spiers**.

FASTS

MEDIA RELEASE ON INNOVATION SUMMIT IMPLEMENTATION GROUP - BLUEPRINT FOR JOBS

The report of the Innovation Summit Implementation Group (ISIG) has been greeted warmly by Australia's scientists and technologists. The Review was released today (Monday).

Professor Sue Serjeantson, President of the Federation of Australia's Scientific and Technological Societies (FASTS), said all attention will now be on the Government to see how it responds.

"The Government has two important reports on the table, those of ISIG and Chief Scientist Robin Batterham (released ten days ago). Together they provide an integrated package for an innovative modern economy," she said.

"And taken together, they set out a blueprint for Australia's future in what will be the most competitive century in modern history.

"David Miles (Chair of ISIG) and Robin Batterham have pointed Australia in a bold new direction. It is up to Australia to take advantage of their wisdom."

Professor Serjeantson said that many of ISIG's 24 recommendations have long-term national implications.

"To be fully effective, these recommendations need the broad support of all parties.," she said. "There is room for healthy debate over which road we take, but we need national agreement on the destination.

"That destination has to be an Australia whose employment future rests on the bedrock of science and technology.

"It's hard to think of worthwhile, high-pay, sustainable jobs in the coming century that do not depend on science and technology.

"Unless we embrace the general thrust of these reports, we are putting in jeopardy the job prospects of the next generation and the one after that. Australia will become a curiosity, a cute place for tourists to admire the wildlife."

Professor Serjeantson said that earlier this year, FASTS urged the Government to introduce a mini-Budget to address this most urgent of national problems.

"We repeat that call. Australia's comparative position in the world pecking order has sagged in the last few years, and we can't afford to let it slip further," she said.

She said FASTS particularly applauded ISIG proposals to
... double the funding of the Australian Research Council
... provide tax breaks for small innovative companies
... give a massive boost to research infrastructure

"But this is a package," she said. "It's not a matter of picking and choosing among the recommendations - they fit together as a plan for future jobs."

BERD AND BOARDS

The news that business expenditure on R&D (BERD) had slumped to a decade low level was greeted with dismay by Australia's peak body for science and technologists today.

BERD as a percentage of GDP fell to 0.67 per cent in 1998-99, down from a high of 0.86 per cent two years ago. It has plummeted to levels not experienced since 1992-93, and places Australia near the bottom of the international league.

Professor Sue Serjeantson, President of Federation of Australian Scientific and Technological Societies (FASTS), described the figures as scary but said there was hope, provided Australia acted quickly and decisively.

"We could begin by thinking of it as "Business INVESTMENT on R&D (BIRD)," she said.

She backed a call made by prominent company director Stan Wallis for a fresh look at the way companies view their future. Mr Wallis called for entrepreneurs to be brought on to company boards at an address to the Centre for Corporate Public Affairs in Melbourne last Wednesday.

"Scientists could revitalise company boards in Australia," she said.

"As Mr Wallis says, we're living in the knowledge economy and intellectual capital is replacing financial capital as the driving force in many new economy companies."

Professor Serjeantson said scientists and technologists are not shirking their responsibilities in tackling this issue. FASTS is running a Forum "Science and Technology in the Boardroom" at the National Press Club on August 2.

Speakers on the day will be former head of the IR&D Board, Dr Terry Cutler, together with Don Mercer, Ian Dunlop and Leanna Read.

"A judicious injection of science and technology into Australian company boards would help them become more aware of new investment possibilities," she said.

"We need the expertise which has been harnessed so efficiently by other countries in the region Just last week, Singapore gave its Economic Development Board another $1 billion to encourage private-sector research and development investment into the country."

When top pharmaceutical company, SmithKline Beecham, announced Singapore as the location for its clinical R&D for Asia-Pacific, Vice-president Dr Anthony Rebuck, said that SmithKline is bringing opportunity and resources into a country famous for encouraging creativity, investment and the harnessing of talent.

"Where does that leave Australia? At the moment we're kicking our heels on the street corner, watching other countries zoom right on past us," Professor Serjeantson said.

She said the Forum will be an important part in an urgent process to re-examine the way Australia positions itself for the future, with major reports on innovation due out soon.

"SCIENCE MEETS PARLIAMENT" DAY 2000

Australian scientists will be arriving in numbers at Parliament House later this year, to meet with the Members and Senators who represent them in Canberra.

"Science meets Parliament" Day will be held on Wednesday November 1. The event enables Parliamentarians and scientists to exchange views on how to make the best use of science and technology in the national interest.

It comes at a time at a time when important political decisions are being made about science and technology, with the Government considering its response to the Batterham Review and the Innovation Summit Implementation Group.

"Science meets Parliament" Day is organised by the Federation of Australian Scientific and Technological Societies (FASTS).

Professor Sue Serjeantson, President of FASTS, said both scientists and Parliamentarians enjoyed the first such event held last year.

"We need more political savvy among scientists," she said. "Scientists and technologists know they have to operate in a political world.

"At the same time, we need more scientific savvy in our politicians. They need a clear view on the potential and limitations of science and technology."

Professor Serjeantson said FASTS is working with senior MPs from Government and Opposition parties to make the event a success.

The Minister for Industry, Science and Resources Senator Nick Minchin, the Opposition Science and Resources spokesperson Mr Martyn Evans, and the Democrat spokesperson for Science & IT Senator Natasha Stott Despoja all support the event.

The Day itself is preceded by a day of briefings, where participating scientists will talk strategy and tactics at the National Press Club.

Briefing Day on Tuesday October 31 features a lunchtime address by Dr Neal Lane, Assistant to the President for Science and Technology and Director of the White House Office of Science and Technology Policy.

Professor Serjeantson said FASTS expected that 200 scientists and technologists, and most members of the Senate and the House of Representatives will participate.

"Our scientists really enjoyed the Day last year. They learned a lot about Parliamentarians and the pressures and constraints that operate in their lives," she said.

"And I think Parliamentarians have a new respect for scientists and technologists, and their determination to make Australia a better place."

A TERRIBLE SET OF NUMBERS

New figures released by the Australian Bureau of Statistics show that Australia's expenditure on Research and Development slumped ten per cent against GDP in the two year period from 1996-97 to 1998-99.

These were the worst results in an international comparison of seventeen OECD countries.

Gross Expenditure on Research and Development (GERD) is now back to the levels last experienced in Australia in the early 1990s.

Professor Sue Serjeantson, President of the Federation of Australia's Scientific and Technological Societies (FASTS), said Australia ranked sixth last internationally. Each of the countries below Australia improved their national investment in R&D.

"We are going against the tide of informed international opinion," she said.

"Japan, Finland and the US all spend twice as much as Australia. Every country in western Europe, from the minnows to the giants of the industrial world, is spending more on R&D than Australia."

The only exception is Spain, but even so Spain increased spending by ten percent as Australia fell back by the same amount.

Professor Serjeantson said that although Australian investment in R&D has fallen steadily since the Coalition Government came to power, it is too early to write this Government off.

"The new capital gains tax system is a positive step, and the Government is about to respond to two major reports into science and technology," she said.

"The Batterham Report and the Report of the Innovation Summit Implementation Group offer a major opportunity for the Government to reverse this decline into economic irrelevance

"It represents a once-in-a-decade opportunity.

"The Prime Minister said at the Innovation Summit that we should judge his Government by its actions. We accept this."

She repeated her call for a new investment in Australia's research effort of one billion dollars.

"I'm talking about jobs, new industries for the next generation, solutions to our environmental problems, and an Australian dollar that can hold its head up overseas," she said.

"It's time for the empty rhetoric to stop."

NEW ALP POLICY WELCOMED

Australia's peak council of scientists and technologists welcomed the policy announcement by the Labor Party that a Labor Government would double the number of research fellowships open to Australian scientists.

Professor Sue Serjeantson, President of the Federation of Australia's Scientific and Technological Societies (FASTS), said today (Thursday) the policy release comes at a crucial time.

She labelled it "an important contribution to the debate on Australia's future", and said doubling research fellowships would help address the 'braindrain' issue.

"The braindrain is a bio-indicator of the health of the Australian research and innovation system," she said. "If people are leaving the country in droves, it shows our national settings aren't right "

Professor Serjeantson said two major reports on science and innovation are due to be released this month - the Chief Scientist's Review of Australia's Science Capability (mid August), and the report of the Implementation Group of the Innovation Summit (31 August).

"The minds of the policy-makers are focussed on the best possible return for Australia from our national investment in science and technology," she said. "The policy announced by the Labor Party is a useful contribution to these discussions, and sets a benchmark."

She expressed the hope that Australia might move towards a bipartisan approach to the broad picture governing the national investment in science and technology.

"Science policy should be stable but not static," Professor Serjeantson said. "It has to be predictable so industry and researchers can plan with confidence for the future. Many science-based processes take a decade to come to fruition."

She was critical of a tendency for incoming Governments to undo programs put in place by previous administrations, whether the program had merit or not.

"Science policy should not become a political football," she said. "It affects the lives of many talented young Australians now. We need long-term planning that goes beyond the next election cycle.

TURNING HALF CHANCES INTO THE KNOWLEDGE ECONOMY

Australia is "well on the way" towards being a knowledge nation, but a long way from having a knowledge economy.

What it needs, according to Professor Sue Serjeantson, is a new national resolve to turn the half-chances and the missed opportunities into skilled, creative, well-paid jobs.

Professor Serjeantson, President of the Federation of Australian Scientific and Technological Societies (FASTS), made the remarks while opening the forum "Science and technology in the Boardroom" at the National Press Club in Canberra today (Wednesday).

"Australia is on the right track in policy terms, but we're doing it all in slow motion," she said. "It's hard to be patient when you see the rest of the world moving along so quickly,"

She said the main aim of the forum was give impetus to a process of transforming the way the Australian economy works.

"Industry needs a technology boost at the highest level," she said. "We need to change industry's mindset, so boardroom discussions are about the next ten years rather than last month's correspondence. It's about sustainability rather than the bottom line.

"Company boards need a judicious injection of scientists and technologists so they can take advantage of the opportunities offered by a technology-driven world. They need to raise their level of comfort in dealing with new concepts and new possibilities offered by technology.

Professor Serjeantson said that the next twelve months offered a "once-in-a-decade" opportunity for Government to get the national settings right., with two major science and innovation reports due and a budget surplus looming.

In a blunt message to the Forum, she said the outcome had to include additional national investment in the infrastructure surrounding innovation.

"It is a necessary and prudent investment in our future, so that we can maintain our high standard of living in a sustainable way through the next century," she said.

"EXCELLENCE MUST BE COMBINED WITH RELEVANCE"

THE BATTERHAM REVIEW

The Chief Scientist's Science Capability Review has been greeted with enthusiasm by Australia's scientists and technologists.

Professor Sue Serjeantson, President of the Federation of Australia's Scientific and Technological Societies (FASTS), said Chief Scientist Robin Batterham has identified many of the outstanding science issues where Australian investment lags behind other countries

"Basically, it's a terrific report," she said. "Robin Batterham is spot-on in his analysis of where we need to invest so Australia can build itself a future.

"The Report is a clever balance, calling for greater national investment' in people, in ideas, and commercialisation. We do need to find new ways to do things.

"Robin Batterham has set a clear direction for Australia's Modern Economy."

Professor Serjeantson said the Review picked up almost all the issues FASTS has been urging the Government and industry to act on over the past five years.

"We are pleased to see calls for:
* increased investment in basic research
* measures to stop the brain drain
* boosting science education for our kids
* investment in national innovation infrastructure

"The Reports as it stands is literate, but it's not yet numerate," she said. "It needs dollar figures added."

She urged the Government to move swiftly to implement the recommendations of this Review when it resumes in late August. By then the recommendations of the Innovation Summit Implementation Group will be in the hands of the Government.

"The next decade belongs to Science and Technology. The world is undergoing a revolution bigger than the industrial revolution," she said. "That is what the Chief Scientist recognises. The Review is a blueprint
for exciting jobs for all our young people."

Professor Serjeantson said that FASTS will respond in detail to Dr Batterham.

The Review will be posted on the ISR website at: www.isr.gov.au

A POSTCARD FROM THE FREE MARKET

DEFINITELY GUILTY, BUT PROBABLY NOT

I'm probably not allowed to say anything about it, so all the names and places and dates have been changed to protect the innocent. Some time ago, I was contacted to be an Expert Witness and review some evidence that some court was going to use to prosecute Company Y, on the basis that they had polluted a river and caused environmental damage. It was all about bug sampling and AUSRIVAS and suspended solids, so they thought I might know something about it.

Depending on my assessment, I may be called to give evidence in the case. Sure, that sounds interesting. I've never been an expert witness before. And there was the thought that the rates were due about the time the cheque would turn up. Sure, send me the stuff.

I've heard horror stories about scientists getting into the witness box. Any hint that you are not completely sure about your conclusion and clever lawyers pounce .... "so Mr. Doeg, you don't sound too confident. I put it to you that the environmental damage allegedly caused by my client may, *ipso facto in flagrante delicto*, be due to the possibility that the solar eclipse the month before caused excessive invertebrate drift (as has been shown) and the river had not had time to recover since then. What do you say to that proposition?" All delivered with that smug self-satisfied sneer of a hunter with a big gun facing a small furry animal.

"Well .... Um ... It's very unlikely because .. ."

"But not impossible? Completely impossible?"

"Well .... Um .... Er .... Not completely."

"The defence rests."

About a week later, the "evidence" arrived. It took a small truck to deliver it. Mainly these thick wads of sworn statements. I'll never read all these (damn those fixed price contracts!) – I expected a few graphs and a couple of species lists and a sheet of turbidity readings.

OK let's start with Bill's evidence (75 pages):

"On Tuesday 21 June I was travelling in a northerly direction when I noticed a coloured discharge emanating from a small creek (Photo attached). I was accompanied by Tom, and I pointed out the discharge to him. I changed direction and walked in a westerly direction along the creek and traced the source of the coloured discharge to the fence of the factory that I subsequently found to be operated by Company Y (Photo attached). .....

With one 2 litre plastic jar, I collected a sample of water at 10:07 from the water surface at a point not more than 70 cm from the bank of the river approximately 15 metres upstream from the small creek from which I had noticed the coloured discharge being discharged. I called this Site 1 and labelled the jar "Site 1". With another jar, I collected a sample of water at 10:19 ..... approximately 15 metres downstream from the small creek from which I had noticed the coloured discharge being discharged. . I called this Site 2 and labelled the jar "Site 2"... . "

Gee, even Ph. D. theses don't go into this much detail!

And there was a 50 page document from Tom, swearing that on Tuesday 21 June he was travelling in a northerly direction with Bill when Bill pointed out a coloured discharge emanating from a small creek (the photos were attached again). And how he watched Bill take the water samples.

And how they went back to the car, and put approved EPA evidence tape around the jars, and how they returned to the office and put the jars in a fridge and the next day submitted it to the lab (transfer document attached) in a blue Esky and how the lab sent the results sheet back (copy attached).

And there was another 50 page document from Melissa at the lab swearing that she received the samples detailed in the transfer document (another copy attached) and how she removed the bottles from the Esky and opened than, and how she did the analysis (most of the lab manual attached) and how she sent the results back (hey, there's another copy of the results).

Better have a look at the results sheet. At first I thought they had measured it to 3 decimal places (a bit excessive, but maybe that's just legal stuff). But then it becomes obvious that the decimals are commas – and that the readings are in thousands. Gee, haven't seen those sorts of levels since that weir release wiped out everything. Not good news for Company Y – but can they prove that significant environmental damage had occurred?

The bug data (sampling protocol attached, even drawings of common invertebrate taxa attached – and, oh … there was a 50 page statement from the technician who identified them, all in the same detail) came down to 4 samples. Two from a site upstream (and even these weren't completely in the clean water well upstream of the creek) and 2 from a site downstream. The data was processed through AUSRIVAS and the O/E scores were lower in the 2 downstream samples than the upstream samples (copy of paper on AUSRIVAS attached – and copies of the species list and the O/E tables were attached to everyone's evidence).

So, after wading through the detail, contemplate the evidence. No site replication. Only 2 samples per site. A bit of a duff control site. I don't think AUSRIVAS was really designed for this type of comparison. Can't do any stats on it. Can't get a significance level on the difference. A few little niggly things like the times not quite corresponding (10:07 in one was 10:09 in another, and Tuesday 21st was Wednesday 21st in another).

And the thought struck me. If I wanted to, I could get these buggers off! A few choice quotes from standard scientific and statistical texts on experimental design. A few sentences that put doubt into the significance of the results (hey, it could be just due to chance). Type 1 and Type 2 errors. It would be possible to suggest that the evidence wasn't that strong.

On the other hand, the silt levels were extraordinary. The difference between upstream and downstream was pretty clear (especially if you consider that some disturbance may have occurred upstream). The taxa that were missing were classic examples of families badly affected by silt. Each individual piece of evidence may be open to question, but taken together, the picture was overwhelming that there had been a real impact.

Dilemma. Do you be the strict scientist (as an "Expert") and put all those ifs and buts in the report? Do you actually say that we can never actually prove anything, we can only disprove it (do we bring in the philosophy of scientific and human endeavours)? Or do you state exactly what your conclusion would be from the evidence presented? Scientific fact or opinion?

Saved by a little piece of paper that was included with the pages and pages of evidence. Schedule K – Expert Witness Code of Conduct. Expert Witnesses are to "... provide a report as to his or her opinion ..." and "... give opinion ...".

You're nicked mate!

Update from last time: You may remember that I was involved in bids for a project with Companies A, B, C, D, Z and W. The job went to Company M (bastards).

From : Tim Doeg

POSTCARD FROM CAMBODIA

WHERE THERE'S WATER THERE'S FISH

"Mian dtoek mian trey" or "where there's water there's fish". This old Cambodian saying was one of the first phrases I learned in Khmer (shortly after 'where is the toilet'). I'd read the statistics about freshwater fish in Cambodia (nearly 500 spp in the Cambodian Mekong, on average 75% of the dietary animal protein of Cambodians is from freshwater fish, etc) but I still didn't really believe it until I saw a kid pull a small fish out of water-filled tyre track using a stick and string. I finally realised I'd gone from a place where fishing was a lifestyle option to a place where there was no other option. In Cambodia you can't think about aquatic ecosystems without thinking about people. This link is nowhere more evident than in the floating villages on the shores of the Tonle Sap Lake near where I live. People live in houses on stilts or in floating houses and the location of the village changes with the level of the lake which increases from around 4000 sq km to 12000 sq km every wet season.

In a country where fish are assumed to be ubiquitous, the concept of a fish shortage is a new one. Evidence exists however that the catch from the Tonle Sap, which is under increasing pressure from an expanding population, is changing. The average size of fish caught is getting smaller as longer lived species become less common. There are likely to be range of factors contributing to this change, ranging from overfishing to many varied forms of habitat loss and degradation. Not surprisingly fisheries management is a highly political issue. There is money to be made but people also need access to resources for their subsistence. One approach being promoted by many non-government organisations are various small scale aquaculture enterprises - traditionally a minor component of fisheries here. At this stage Tilapia and various Carp species are being promoted because they are easy to rear. The highly developed fish palate of the Cambodians is slow to accept these foreigners though and I hope to work with local people interested in promoting local species.

And what of the local invertebrates??? My experience so far has been restricted to those groups that predate on fish fry and those that make for a good feed. I can personally recommend the local Machrobrachium but may give the fried Belostomatids and Dytiscids a miss although the latter are apparently good with a beer.

As I progress into some more hands on work I will undoubtedly be tapping into the ASL resource. Thanks to those who responded to my 1st query on the list server and I welcome any other input about the region or the types of issues I've touched on.

Ruth O'Connor
Fisheries Department
Siem Reap, Cambodia
email: aic@camintel.com (put "Ruth" in the subject)

ARTICLES

Environment Australia recently released a discussion paper authored by the Biological Diversity Advisory Council, entitled: "Biodiversity Research: Australia's Priorities"

I believe this paper is available on the EA web site It was also available through leila.matthews@ea.gov.au . Comments were due by 31/8/00.

After perusing the paper, I felt that freshwater biodiversity issues were underplayed. As a result of my comments to EA, I was requested to prepare a paragraph or two summarising "threats to Australia's freshwater ecosystems" for possible incorporation in this report.

By Jon Nevill.

THREATS TO FRESHWATER ECOSYSTEMS (DRAFT)

Australia is the world's driest inhabited continent (the driest being Antarctica), and rainfall over much of the land is highly variable In the two centuries since European occupation, freshwater (both surface and ground) has often been a scarce commodity, and (generally speaking) supplies have been extensively harvested and allocated for human use. In the Murray-Darling Basin (Australia's largest river basin) if all existing water allocations were implemented, 90% of the average natural stream flow would be diverted. The Basin now experiences drought level flows three years out of every four, compared to one in twenty years under natural circumstances (Commonwealth of Australia 1998:22). In spite of gross over-allocation of the water resource, the Murray-Darling Basin Ministerial Council has difficulty implementing a cap on water usage (Murray-Darling Basin Ministerial Council 1998; Murray-Darling Basin Commission 1998).

Wetlands have been extensively drained, cleared and grazed for agriculture. It is estimated, for example, that around 50% of Australia's wetlands have been converted to "other uses" (Commonwealth of Australia 1997:7). In other areas the situation is much worse: for example, less than 4% of wetlands in the south-east of South Australia remain (R Walsh, pers. comm. 11/5/00).

Water abstraction and pollution, habitat degradation, and introduced aquatic pests continue to present major problems to remaining wetlands of conservation value.

Prior to recent water reforms, groundwater and surface water flows were managed with very little coordination For example, until the revised Water Management Act was passed by the Tasmanian government last year, groundwater and surface water flows (even when directly interlinked) were managed by different State government departments, under different pieces of legislation and policy, for different objectives and within different government programs. In some locations around Australia, groundwaters have been so heavily used that springs have dried up. Chemical and salt pollution, and changes to aquifer flow patterns, have had serious effects on some freshwater ecosystems.

Australia's National Strategy for the Conservation of Biological Diversity provided a strategic framework incorporating both systematic protection through reservation, as well as the use of "best practice" in utilised ecosystems. Although terrestrial ecosystem reserves are now well advanced in many areas, freshwater and marine reserves have not received the same degree of attention.

Freshwater ecosystems in Australia have received considerable study, however comprehensive freshwater ecosystem inventories remain unfinished in most Australian States. Western Australia, Queensland, Victoria and New South Wales are all committed, in terms of policy statements, to the development of systems of representative freshwater reserves, however Victoria is the only State to fund a program to develop such a system. And even here, the program did not achieve its objectives, and is in urgent need of revision.

Good examples of sites which need urgent reservation to protect site-specific values are the artesian springs associated with the Great Artesian Basin (mound springs). These unique habitats contain a diverse endemic fauna (fishes, invertebrates). While there are some that are now protected in South Australia virtually none of those in Queensland are protected, including the group with the largest endemic fauna (Edgbaston Springs). There is increasing evidence of extraordinary endemism in some groups (especially molluscs and crustaceans) where many taxa are confined to single streams or watersheds. (Pers.comm. Winston Ponder, Australian Museum, 3/8/00). An aquifer in Western Australia has the highest diversity of subterranean amphipods recorded anywhere in the world, highlighting an area of conservation significance and concern (Western Australian Museum, media release 29/8/2000).

General references: see, for example, Australian State of the Environment reports (Commonwealth and State), the National Biodiversity Strategy, the Wetlands Policy of the Commonwealth of Australia, technical papers under-pinning these strategic documents, and journals covering Australian freshwater ecosystem issues.

Specific references: available from

Jon Nevill.
Tasmanian address: 317 Strickland Ave, South Hobart 7004
Permanent postal address: PO Box 106, Hampton, VIC 3188,
Preferred email address: jon.nevill@bigpond.com

TRANSLATING THE LANGUAGE OF WETLANDS FOR VISITORS:

I was pleased to have the opportunity of preparing an article for the ASL Newsletter and would like to put to all readers the importance of sharing what you have with the many have-nots in your community. What you have is deep understandings of environmental systems and concepts, important intellectual capital which needs to be invested back into the community.

I work as an educator at The Wetlands Centre Australia, which started life in 1896 as Shortland Wetlands Centre. Working in a wetland everyday is a special sort of luxury. Not only is my view magnificent, but I have been able to develop an intimate knowledge of my particular wetlands. This is most useful, as I am paid to peel back the skin of my wetland so that visitors can better understand its inner workings, a task which gives me great satisfaction.

The Wetlands Centre might be described as a mature restoration project which has now established its own hydrological regime and ecological cycles and patterns in response to changing water levels. Site management is carried out by one or two paid staff and a volunteer team with what can best be described as a hands-off approach. That is, active responses to changes in the system are extremely minimal even when changes ruin the view, management of buffer zones between people spaces and "edges" favours the ecosystem rather than the appearance and the major area of works continues to be the revegetation of particular areas for specific purposes. While this approach has been dictated by low levels of financial resources, in many ways it has proved beneficial as it allows us to demonstrate sustainable community management of wetlands.

It is equally important that the Wetlands Centre has always been about educating for wetland conservation, bringing visitors along the continuum from interest to appreciation to understanding. Walking into our wetlands, visitors would never guess that such a tranquil patch of habitat can hide a bug-eat-bug war zone which is seething with life and turning over at an incredible rate. This is the job of the interpreter, to bring this to life for others. This can be done in many ways and can be very informal or structured. Above all, the role of any interpreter is to assess the starting point of the listener, identifying just how much to deliver to make a positive impression.

Coming face to face with wildlife, even small wet wildlife, can go a long way. Second best is contact with "people who know", as every visitor comes with a question. Text and graphics are last, but of course can serve thousands of visitors and can be done in may wonderful ways, money providing.

My end note goes back to my point about intellectual capital; we all have something to share and investing it back into the community can build support for better conservation management in the future. Find your medium, whatever it may be.

Christine Prietto, Teacher-in-Charge, The Wetlands Centre Australia

DAM THE BURDEKIN

This interesting and highly relevant song was sent in by Queensland correspondents.

We came across this song from 1978 advocating a dam be built on the Burdekin R in North Queensland. It must have worked because there certainly is one there now. I'm sure that the author would be pleased that all that water is no longer going to waste!!

A copy of the music (apparently country in flavour) is available upon request from the editor.

Verse 1
The might Burdekin, constantly,
Just floods its waters into the sea.
But do we harness its might power
To run new industries by the hour?

Chorus
Dam it now! Dam it now!
It's overdue, you must allow.
Brisbane, Canberra, please somehow
Dam the Burdekin, dam it now!

Verse 2
Our mighty Burdekin, don't you think
Could give North Queensland a dam good drink?
But do we harness its mighty flow
And give North Queensland a real fair go?

Chorus
Dam it now! (etc)

Verse 3
The Ross Dam arguments go ahead!
They dam the flamin' dry plains instead!
Some day poor Townsville will sure be cursed,
When all its people will die of thirst.

Chorus
Dam it now! (etc)

Verse 4
Each time the elections are coming round,
All want the Burdekin off the ground;
But when the bulldust has cleared of course,
We find the Burdekin's our dead horse.

Chorus
Dam it now! (etc)

....

by John Ashe (dedicated to Frank Rossiter)

AMAZING TALES FROM THE WETLANDS CENTRE

Wetlands are busy places, with rapidly changing populations, fierce competition for food and many challenging sexual conflicts . For those of us who work in wetlands, coming across these amazing tales is common place. But the rest of the world is not so lucky. Through The Wetlander, the newsletter of The Wetlands Centre, we try to share these stories with others. I though I might share some of our amazing tales with ASL readers.

Tale no. 1: Consider the male oval waterbug. These poor battlers have got a raw deal on the family side, although I'm sure many female readers would say "It's about time!" The story is that the female oval water bug lays her eggs on the males back and then swims away, never to be seen or heard from again. We always wonder just how it happens. Does she sneak up on him while he is sleeping? Or has he actually volunteered? At any rate, when it's the season for these paternal macroinvertebrates, visiting children find lots and lots of them in their dipnets. Either there are hundreds of them or being a Dad takes the edge off your cunning. Perhaps carrying all those eggs slows them down a bit.

Tale No.2: If you have ever wondered how a carniverous duck which cannot dive for it's food goes about getting a feed (and I'm sure you have), you'll have to speak quietly to a Pink-eared duck. They have found a dizzyingly brilliant way of solving the problem. We had a first hand demonstration of this recently on the main pond at The Wetlands Centre. Two pink-eared ducks were swimming around in a very tight circle, just over a ducks body-length apart. Round and round they went, ducking their beaks into the water at regular intervals. A gathering crowd watched excitedly, thinking they were about to do something else. Turns out our pink-eared friends were engaging in a feeding strategy called vortexing. Their constant circling created a whirlpool which sucked up all sorts of unsuspecting crunchy critters. Now isn't that clever?

Tale no.3: One of the large tortoises in the tank in the Visitors centre had egg-laying on her mind. Luckily she had booked the Business Class tank with the land feature at one end (a section of mulch for just such an occasion), good enough for getting rid of the eggs and going on her merry way. This was on a Friday/Saturday in late October The eggs sat there in sauna-like conditions, in full view, attracting the curiosity of many visitors, children and adults alike.

Wonder of wonders, 3 months later, on a Friday afternoon, there was movement in the mulch! Sue Wright, one of our longest serving staff members, was the first to notice it. The next morning found 9 very small tortoises swimming happily around, exploring their new home. We are unsure whether our serendipitous success is common or very unusual. Either way, it has been a wonderful chain of events and it has been great to be able to share it with visitors to the Centre. One can't help but wonder if there is any attraction when they swim past Mum.

Christine Prietto, Teacher-in-Charge, The Wetlands Centre Australia

WATER, DAMS AND THE END OF CIVILISATION?

This paper was presented to the Environment Institute of Australia Annual Conference in Hobart on 1 December 1999 by Jon Nevill. A more detailed version of the paper (around twice the length) can be obtained from jon_nevill@hotmail.com

1. IN BRIEF

If we look back over the last five thousand years, we have evidence that great civilisations have risen and fallen. What caused the collapse of the civilisations, for example, that existed around the Tigris and Euphrates Valleys, or those of central America? Was it disease? war? perhaps even climate change? In something as substantial as the collapse of a civilisation, reasons were probably complex. However, my guess is that the mis-management of water was a primary cause. Out of three key primary resources which any civilisation needs: clean air, fresh water and arable land, water is the resource which can most easily be damaged by human demands.

2. ANCIENT QUESTIONS

If we look back over the last five thousand years, we have evidence that great civilisations have risen and fallen. What caused the collapse of the civilisations, for example, that existed around the Tigris and Euphrates Valleys, or those of central America? Was it disease? war? perhaps even climate change? In something as substantial as the collapse of a civilisation, reasons were probably complex. However, my guess is that the mis-management of water was a primary cause. Out of three key primary resources which any civilisation needs: clean air, fresh water and arable land, water is the resource which can most easily be damaged by human demands.

3. TRAGEDY AND TYRANNY

You might say: "Well, that's all very well, but we know better today. These days we do things differently". Maybe, maybe not. I argue below that the degradation continues, and will continue. The situation is complex. It is difficult to predict even the most important elements of a complex future. But we *can* say that there are two mechanisms which work strongly to continue the path towards degradation.

3.1 The tragedy of the commons

The setting for the tragedy of the commons (Hardin, 1968) is that of a public resource ("the commons") subject to private use. Excessive use of the resource will cause its degradation.

For example, public land may, by right or by tradition, be available to shepherds for grazing their flocks. If the flocks are small in comparison to the resource, the land will sustain little (perhaps no) damage. If the price the shepherd receives for his produce is more than enough to compensate for the rent (all things considered) there will be an incentive to increase the size of his flock.

As the grazing pressure increases, the land will start to degrade. But the profit the shepherd makes from his extra sheep accrues directly to him, whereas the cost of the damage the sheep cause is born by the whole community. For the person who makes the decision (the shepherd) the profit from the extra sheep will tend to outweigh the cost, until the commons becomes highly degraded and sheep start to die.

The profit one farmer makes from using the water in his dam accrues to him directly; the costs of the degradation to the river system are born by the whole community.

So... mechanisms are necessary to ensure sustainability of use. We all know that. But when we look at the Murray-Darling, we know these mechanisms have failed.

Why have they failed? And are the mechanisms which are now in place more likely to be effective?

3.2 The tyranny of small decisions

The tyranny of small decisions (Odum 1982) is to some extent an extension of the tragedy of the commons. It has to do with the way public agencies, charged with the management of a public resource, make decisions about the use of this resource.

Firstly it is common for such agencies to have a charter aimed at protecting the sustainable value of the resource. Secondly, it is also common for such agencies to have a list of considerations to be taken into account when making decisions, and one consideration will, of course, relate to the interests of applicants wishing to undertake developments.

Thirdly, in any strategic plan, there are almost always discretionary clauses available to the public agency. Activity X is not to be permitted, except in special circumstances...

The mechanism of the tyranny of small decisions relates to the *smallness* of the effects, and their cumulative nature. The degradation of the resource resulting from one small decision is so small, in the overall scheme of things, that it is difficult to identify, and almost impossible to predict in quantitative terms. Now, if it is impossible to measure, surely, surely... it cannot be weighed against the pressing interests of the applicant?

As an example, let us say a local municipality develops a plan relating to a small estuary. Fifty percent of all fringing mangroves have already disappeared. Their role in nutrient recycling and the provision of habitat is recognised. There is to be no further clearing of mangroves. The strategy is accepted. The following year, the Major's brother purchases a property adjacent to the water. He applies to build a jetty. Yes, clearing of mangroves is prohibited, but there is a discretionary clause, and, after all, only a small area is involved... So the jetty goes ahead. And, three months later, another, and another... Ten years later, only a few scattered mangroves survive as reminders of the shoreline which once was...

This mechanism, of course, applies to catchments. What harm can just one more small dam do...?

4. FOUR "INTRACTABLE ISSUES"

Four issues present particular difficulties to those working to use and protect freshwater resources:

- cumulative effects of incremental development
- sustainability
- protection of *representative* freshwater ecosystems, and
- fish passage

4.1 Cumulative effects

Take the tragedy of the commons, add the tyranny of small decisions, and you have cumulative effects. And you have a problem which is very difficult to deal with.

What needs to be done?

Due to the complex and incremental nature of threats and effects, science does not, and cannot, provide us with benchmarks. We must establish simple, measurable benchmarks on the basis of judgement.

We need certain information. In each major river basin, we need ready access to information on existing water allocations, and whether they are fully utilised. We need to know how many dams exist, both under permits and without permits, and we need to know their capacity. We need information on runoff and streamflow, from either direct gauging records or from reference catchments. We need 10th, 20th and 50th (median) percentile flows, and average flows.

We also need maps showing all existing dams and weirs. The Wild Rivers Database, released by Environment Australia in mid-1999, in theory provides this information. However, from my observation, there are sufficient inaccuracies in the River Flow Disturbance Index data to make the information unreliable. It is, however, a base to work from.

Finally we need good data on river health. We need physical and chemical indicator water quality monitoring sites in every major catchment, with quality controlled longitudinal data sets. And we need macro-invertebrate data, such as the AusRivers data.

Having this platform of basic data, we need to establish benchmarks on the basis of judgement. Caps to limit incremental development must be set.

All Australian States have begun the process of developing environmental flow recommendations, at least for major river systems. These environmental flows, once agreed, will be built into water allocation plans. However, this process may take some years to become effective as a tool for managing flows.

I proposed that, pending the development of fully fledged water allocation plans (encompassing environmental flow requirements) caps be placed on both new water allocations and new dam permits.

Firstly, the lead provided by NSW in regard to "dams without permits" should be followed Australia-wide. NSW has introduced a 10% "harvestable right" which limits the amount of surface runoff a landholder can capture in an as-of-right dam. No more than 10% of annual runoff can be harvested in this way. This figure is calculated by multiplying the area of the property in question by factors which account for differing runoff rates across the State.

Secondly, where river health data indicates that the lowland reaches of a catchment are under seasonal stress, there should be an immediate cap on any further water developments pending finalisation of the water plans: so: no new water allocations and no new dam permits.

Thirdly, where river health indicators suggest that catchment rivers are still in good condition, there should be a cap placed on dam capacity within each major catchment and component sub-catchments. I suggest that the development of dams should be limited in total to dams having a total capacity equivalent to 10% of the median catchment yield. Each new dam assessment would need to examine the degree to which the dam proposal might prejudice the development of dams by other landholders within the sub-catchment. In other words, the cap would not necessarily be on a first-come first-served basis. This cap could be relaxed after the finalisation of an agreed water allocation plan with provision for environmental flows. The purpose of the cap would be precautionary, and would recognise the ability of existing planning mechanisms to over-commit the water resource.

Fourthly, there should be a limit on inter-basin transfer of water. Inter-basin transfer should not be encouraged, if purely from the point of view of controlling aquatic nuisance species. Except in special circumstances, where transfer is permitted, it should not (I suggest) amount to more than 5% of basin median yield.

Fifthly, there should be controls placed over levee bank construction, through the normal municipal land use planning schemes, and State-wide "model" schemes where these exist.

In Tasmania for example, water allocations can be changed over time; however compensation provisions apply. Dam permits, however, cannot be revoked. Once issued, the dam is there for ever. Given historical precedent, great care must be taken in making decisions which cannot be altered.

Cumulative effects are an extremely serious issue in Australian water management, and any policy developed relating to the management of cumulative effects needs to specifically acknowledge, and encourage the use of, the precautionary principle.

In such policies, it is essential to acknowledge a basic difficulty: that the application of the precautionary principle, in the management of cumulative effects, *will produce results which appear unfair on individual farmers.* Without this explicit acknowledgment, policies dealing with cumulative effects *will never be effective.*

4.2 Sustainability

For medium to large dams designed primarily for irrigation, assessing the sustainability of dam proposals means assessing the sustainability of the irrigation programs on which the dams depend for their economic viability. Few Australian States, at present, have agreed protocols for assessing the sustainability of large dams.

What needs to be done?

The assessment of any large agricultural dam should include an assessment of the sustainability of the irrigation programs on which the dam depends for its viability. *Any feasibility study for irrigation should include an assessment to see if there is significant salt storage present in the area to be irrigated and an assessment of whether there is any saline water table present which is likely to be effected by deep drainage from the irrigation being applied.*

While there are considerable difficulties in carrying out assessments of this nature, they should be undertaken using the best available information. Where there are significant uncertainties, the significance of these uncertainties should be fully described, and approval decisions should err on the side of caution.

There appears to be an urgent need for guidance at the National level in regard to the development of protocols for such assessments, as well as monitoring and surveillance programs to keep watch on the success of irrigation programs in meeting sustainability objectives.

4.3 Protection of representative freshwater ecosystems

What needs to be done?

Australia (and of course Australia's constituent States) is committed (in theory if not in practice) to the concept of *representative* freshwater reserves.

However, the implementation of these commitments across the different States has been variable. Victoria is "leading the pack" with its *Heritage Rivers Act 1992*. New South Wales began investigation of a freshwater reserves system, but the program appears to have been shelved for the moment. Queensland is currently considering the development of a possible *Natural Rivers Policy* to carry the freshwater reserves concept.

Many, but not all, of the values of freshwater systems can be protected to some degree by managing water flow and quality. However, important site-specific natural values cannot be given adequate protection by these means, and consequently these areas need reserve status, coupled with specific management plans, to protect their important natural values.

Importantly, flow and quality controls will NOT ensure fish passage (see below), and are unlikely to protect the full suite of aquatic ecosystem values in the face of vigorous human demand for water for agricultural, industrial and urban use.

It is vital for every Australian State to establish a system of comprehensive, adequate and representative freshwater reserves. In part, this will involve establishing "free flowing" rivers and streams which will be free of dams and weirs for all time. At least two such streams should be set aside in each biogeographic region. These reserves will not only protect important representative ecosystems, but will provide benchmarks against which we can judge the effectiveness of our river management programs in other areas.

The first step to developing such a system of freshwater reserves has already been taken. All Australian States have wetland inventories, although some (eg: Tasmania) of these inventories remain unfinished. Many of these wetlands already have reserve status. The most urgent "next step" is to develop inventories of all freshwater ecosystems. Such inventories can then form the basis for the development of a system of freshwater CAR reserves.

4.4 Fish passage

Fish passage considerations apply to both dams and weirs. The framework for managing fish passage is not well developed at either a State or national level:

What needs to be done?

Building effective fishways around weirs can often be achieved, partly due to the fact that surface spill occurs most of the time, and partly due to the low profile which weirs generally have – providing the opportunity for bypass channels or rock fish ramps. *The most urgent need here appears to be the development of generic designs which can be provided to the owners of weirs and small dams. The development of farmer extension material, such as explanatory videos, should also be a high priority.*

However, building effective fishways to allow passage around medium to large dams represents substantial problems, and is a rapidly evolving area at the present time. Vertical slots and fish locks are approaches which are being developed and tested in various places.

State governments (and the Commonwealth Government) need to provide increased funding with regard to the design and testing of new fish passage facilities, as well as research into fish behaviour and engineering solutions. There needs to be increasing team work around Australia, and increasing emphasis on building fish behaviour parameters into the design of fish passage structures.

Fish travelling downstream over large dams often take the spillway route even when a fish ramp is provided. *Survival rates for different species need to be examined, along with engineering options to increase survival rates (such as plunge pools).*

However, the most important need regarding fish passage is simple the explicit recognition that many fish either don't make, or don't survive the journey. If we are to protect representative freshwater ecosystems, it is essential that we have a scattering of dam-free rivers in each bio-geographic zone.

The alteration of the vegetation of the Banyule Freshwater Marsh

The Banyule wetland is a freshwater marsh located in the Yarra River Valley open-range parklands in the City of Banyule, metropolitan Melbourne. The approximate latitude and longitude of the marsh is 145°05' East and 37°45' South.

The approximate size of the marsh is six hectares and the altitude is about 14 to 20 metres above sea level.
The Banyule marsh once consisted of two adjacent areas, a rush-sedge marsh and a *Typha* species (*Typha orientalis* & *Typha latifolia*).

Currently the marsh, as well as being a sanctuary, is used for storm-water management, though by initial design this was not intended to be the case. A sediment splay, colonised by *Typha*, blocked the drain causing it to over flow into the rush-sedge marsh. At the opposite end of the rush-sedge marsh was a small out let drain (a remnant agricultural drain) feeding into the Banyule Creek, which flows into the Yarra River. This outlet drain meant that the extent of flooding of the marsh was controlled after each rain event. The marsh at times would completely dry-out during dry spells over the summer period, but quickly re-fill after rain.

With these hydraulic conditions, the marsh came to support the largest known stand of rush (mainly, *Juncus sarophorus*) and sedge (mainly, *Carex tereticaulis*) in northeast Melbourne (Beardsall 1994) (refer to appendix for plant species list collected during 1997-98). The habitat is considered of medium significance (Beardsall, 1994), though it is very important for the viability of the population of water birds in northeast Melbourne.

The grassy wetland area of the marsh was the largest and the most intact stand of this type of wetland in inner Melbourne (Beardsall, 1994).

The marsh was frequented by *Gallinago hardwickii* (Latham's snipe) form about August to March and thus is according protection under the JAMBA treaty (Craigie 1993).

In April 1999, the Banyule City Council decided to fill in the small outlet drain, and other remnant agricultural drains previously not connected to the marsh. The result of this action was the raising of the water level of the marsh and further flooding of surrounding paddocks after each rain event. This has led to the drowning of the *Carex tereticaulis* and *Juncus sarophorus* associations and an overall complete alteration of the vegetation dynamics occurring at the marsh. The marsh now looks like a shallow open lake.

Triglochin procerum, always present in the deeper areas of the marsh (especially in the deeper open area of the marsh) has spread (visually) quite extensively in the marsh and is apparently the dominant species, whilst overall there appears to be a plant species loss.

Water birds are now more visible to the bird watcher, but they were always present, taking refugee in the open pools in amongst the rush and sedge areas. However, there appears to be a loss of small passerine species such as *Cisticola exilis* and *Megalurus gramineus*.

It is questionable why the City Council altered the vegetation dynamics of the marsh, was it due to receiving of poor external advice, influence from the local bird observers? Why having a greater volume of standing water in saline prone area (dry land salting scalds supporting scattered

specimens of *Spergularia marina* were observed in the surrounding low lying paddocks in the 1980s and *Bolboscheonus caldwellii* occurred(s) in the marsh environs)? Whatever the cause, a stand of *Carex* and *Juncus* along with an area of *Bolboscheonus caldwellii* and a variety of associated plant species have been destroyed. In addition, permanent quadrat sites have also been lost.

References.

Beardsell, C. 1994. Sites of Faunal and Habitat Significance in North East Melbourne. Volume 1 Dunmoochin Biological Surveys. Prepared for the N.E. Regional Organisation of Councils.

Craigie, N.M. 1993 N.M. Craigie & Associates Water Management Consultants. Report to Melbourne Water – Yarra Region. Mill Park Office.

By W.E. (Bill) Richdale: richdale@optushome.com.au

CHAROPHYTE FLORA

Dear Limno's, below is a request I placed on the ASL list, so read no further if you've already read my plea!

I am currently employed to revise the charophyte flora of Australia (along with Dr Adriana Garica in Wollongong). A daunting task, considering that there are probably 50+ taxa needing examination.

Charophytes are green macroalgae that grow in fresh to saline to hypersaline water. They look a lot like Myriophyllum but they're more fragile (most botany books refer to Chara, and might have a picture). To be sure that we do a good job we need to examine as many specimens as possible, and water being what it is (wet) there are few people who have ventured in to collect green slimy weedy things. So the collections in Australia are few and of variable quality. Ideally Adriana and I would collect in all parts of Australia, on numerous field trips, and consume lots of red wine in camp sites, but finances are not available for this sort of junket. Therefore I am asking that interested limnos collect for us. You all know your field sites well, and there is probably that pesky little charophyte that gets tangled around your gear. It might be a new species! If you'd like to collect charophytes and get the names back drop me a line (address below; email amcnova@netconnect.com.au or phone 03 53506533) and I'll send you more info.

Collecting Charophytes.

When you find them, try to rinse off any debris by gently shaking them under water. If possible, obtain several specimens from the one site as they are often dioecious (separate male and female plants) so a single plant may be insufficient for identification. Try to collect ones with reproductive structures on them (tiny orange or yellow or green or black "berries" on the "leaves") as these are EXTREMELY useful for identification. Put them in a plastic bag with a little water and note field characteristics including depth of water, substrate, salinity and pH if you have facilities for these, (a taste test for salinity is better than nothing), whether the water is flowing or not and how fast, the height of the plants and whether the site is permanent or temporary, site location in relation to major land marks or roads (latitude and longitude if you have it) and any other useful details (e.g. if the site is shaded, or sunny, the other vegetation present, the comparative abundance of the charophyte, presence of fish or invertebrate grazers etc.).

When you get back to the lab or dry land, the easiest thing is to label a piece of paper the right size with some of the details (e.g. location, date, your name and your collection number) then float the charophyte onto the paper if it is very fine and delicate with spreading branches, or just place it on the paper if it is robust and you can arrange it neatly. It is useful to spread the charophyte out on the page because it makes the details of the branches and stems easier to see than if they're all stuck in a lump. Place the wet sheet on newspaper, cover with some waxed paper (so it doesn't stick to the newspaper) then cover with newspaper and press as you would ordinary plant specimens. You will need to change the paper a bit more frequently to get it dry and prevent mould. When the specimen is dry enough to send, place it between two bits of cardboard, and maybe some blotting paper, so it won't get folded and arrive as a very interesting green dust, and post it off to me

If you have the gear wet specimens are also extremely useful, 70% alcohol is probably safest, several stems in a specimen bottle with the pencil written label inside (name, date, location and specimen number). In practice charophytes carry quite a lot of water with them, so I usually put a few stems in a bottle then top it up with straight metho. That works well enough to preserve chromosomes for counting sometimes. Australia Post doesn't like wet specimens much but those that have had experience tell me that if you seal the bottles well (with parafilm or plumbers tape),

do them up tight, put them in a plastic bag with a wad of cotton wool or absorbent paper, then double bag the lot, they travel alright. A padded post bag generally doesn't fall apart even if the bottles leak a bit.

If you want to be very much respected and admired and maybe get a new species named after you, you could send me some soil from the site where the charophytes were growing. The best method is to gather a clod from here and a clod from there (or a handful or a cupful depending on the soil consistency) mix it all up, dry it out in the sun then post it in a plastic or paper bag. Between 100 and 500 ml is useful – but it will depend on who is paying the postage! With soil samples I can germinate the spores and keep the plants under uniform conditions.

If you send stuff to me don't expect to get it back. I will send you the name or else an excited email saying "can I have some more, I have no idea what this one is". All specimens I receive will eventually be deposited in an Australian herbarium, probably the National Herbarium of Victoria, and your name will be recorded forever as a charophyte collector (along with Ferdinand von Mueller, and Robert Brown!).

If your specimens aren't collected precisely as set out above, don't worry too much, send it anyway and I'll do what I can. Happy Charophyte collecting and thanks!

Whatever you collect, post it off to me -

Michelle Casanova, 'Langmorn' RMB L620 Westmere Vic 3351.

ASL POSITION STATEMENT FOR THE SNOWY RIVER

The Australian Society for Limnology (ASL) is an Australian-based scientific society whose focus is the study and management of inland waters. Established in 1961, it has a current membership of over 600 researchers, managers, engineers, teachers and tertiary level students from all states and territories.

The charter of the ASL is to further our understanding of Australia's inland waters and to promote their wise use and sustainable management. Through this, the society contributes to the continued existence of this valued resource and the maintenance and enhancement of the quality of life for all Australians.

Overview.

The Snowy Mountains Hydro-electric Scheme ("The Scheme") and water supply is constructed within a major national park in NSW, containing the only true mainland alpine environment in Australia. The Scheme has resulted in major fragmentation and drastic changes to the flow regimes of rivers within The Scheme, and has severely altered the flow regimes of rivers flowing from the Kosciusko National Park (eg. Snowy, Tooma, Murrumbidgee).

The ASL has written this position statement in response to impending corporatisation of the Snowy Mountains Hydro-electric Authority that will set environmental flows for the long term. The Position Statement arose from a workshop held at the Society's Annual Congress in Darwin in July 2000, and was subsequently circulated to the membership of the Society for comment.

The Society emphasises the need for improved environmental flows for wetlands and rivers of Australia. We recognise that the level of understanding regarding the ecological requirements for environmental flows is relatively limited, but this should not be used as an excuse for a lack of adequate action on the Snowy River and other rivers adversely affected by the Snowy Mountain Scheme.

Therefore, the provision of environmental flows in rivers affected by The Scheme must be part of an adaptive management regime, with adequate monitoring of the environmental outcomes, and the provision for future adjustments to the flows provided.

Our specific recommendations are:

- Environmental flow regimes that are implemented must recognise that there are critical thresholds that need to be met to allow rivers to function adequately. Critical thresholds include inundation of the channel, restoration of connectivity and the provision of a large flood flow event annually.
- An environmental flow regime is implemented in the Snowy River below Jindabyne Dam. This flow regime should be set at a minimum of 28% of the annual natural discharge (see Expert Panel ref, below).
- The environmental flow allocation for the Snowy River should have a minimum flow release of 200-300 ML/day at Jindabyne Dam. Seasonal flow must also be implemented. This flow could be set at about 95% exceedence per month as recommended by the Expert Panel Environmental Flow Assessment of the Snowy River below Jindabyne Dam (1996).
- Each year between May and October, a flood event be released down the Snowy River to restore and maintain habitat and channel morphology.

- To restore natural short-term flow variability and hydrological connectivity in the Snowy River, the aqueducts on the Mowamba River and Cobben Creek be decommissioned.
- To evaluate the effects of environmental flow on the Snowy River, a well-funded monitoring program must be set up and maintained, and that this program becomes part of an adaptive management scheme to periodically evaluate and adjust the environmental flow regime.
- That environmental flow regimes be implemented for rivers in the Kosciusko National Park, adversely affected by The Scheme, such as the upper Murrumbidgee, the Snowy above Jindabyne, the Geehi and the Tooma (Bevitt, *et al.* 1998).
- Appropriate monitoring programs should also be implemented for these rivers, and the management of the flow regimes be carried out by adaptive management practices.

References:

Bevitt, R., Erskine, W., Gillespie, G., Harris, J., Lake, P.S., Milners, B., and Varley, I. 1998. Expert panel environmental flow assessment of various rivers affected by the Snowy Mountains Scheme. Report to the NSW Department of Land and Water Conservation.

Expert Panel Environmental Flow Assessment of the Snowy River below Jindabyne Dam 1996.

MARINE AND FRESHWATER RESEARCH

http://www.publish.csiro.au/journals/mfr

Here at the journal, we have been taking stock. Who's 'we'? Paul Boon is Chairman, and Stuart Bunn is a member, of the journal's Editorial Advisory Committee. Looking after water chemistry aspects is Professor Keith Hunter of Otago University. The remaining committee members cover marine aspects, and Ann Grant is the editor.

Last year was our 50th year of publication, in which the last issue was a special 'anniversary' edition devoted to reviews and viewpoint articles. One of those was cited in *Nature* five months before its publication, and another has been made available via a hotlink on a UNESCO Website, in order to make it available to a 1200-person email forum run by UNESCO. We are keen to publish more review articles, viewpoints and opinions (all are peer reviewed in the normal way).

Of the 344 reviewers consulted during 1999, 229 were from outside Australia. This international peer review assists in maintaining high scientific standards; we hope that prospective authors perceive this to be not an annoying barrier that has to be overcome but a free advice service, whereby some of the most experienced workers in Australia and elsewhere can suggest improvements and refinements to a paper before publication. Thank you to those ASL members who have given up their time to review papers for the journal.

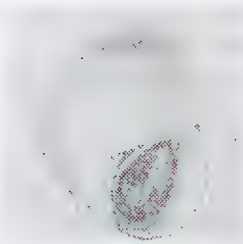
Papers submitted to *Marine and Freshwater Research* over the past twelve months have come from Australia, Brazil, Chile, Finland, France, Germany, Hong Kong, India, Italy, Japan, Mexico, the Netherlands, New Zealand, South Africa, South Korea, Spain, Taiwan, Turkey, UK and USA. (This doesn't include papers submitted for inclusion in special single-theme issues, in which the range of contributing countries is often wider.) Although the journal has worked hard to build its international appeal, this does not mean we have done so at the expense of publishing papers by Australians. Indeed, now that the journal is reaching a greater international audience we believe that the journal offers an even more attractive option for your research publications.

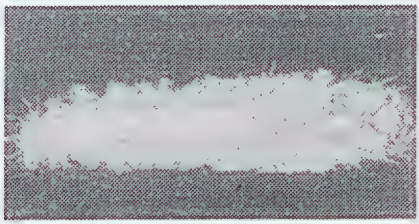
And now we're looking ahead to next year, and indeed to the next 50 years of publishing high-quality research on aquatic science. The first issue in 2001 (vol. 52) will be devoted to catchment management, and comprises papers arising from a recent meeting in Canberra entitled 'Frontiers in Biogeochemistry'. This highlights our aim to encourage aquatic scientists across a broad range of fields (e.g. hydrology, biogeochemistry, ecology) to publish their work in *Marine and Freshwater Research*; the wide subject scope of the journal makes it ideally suited for multidisciplinary studies of this nature. Let's have some more special issues with a freshwater theme! Often, the marine special issues have been funded by bodies such as FRDC or FAO; maybe there's a funding body that would back publication of a collection of papers on a limnological theme. Any ideas? (Please email ann.grant@publish.csiro.au). In the meantime, help us to keep the "*Freshwater*" component of the journal alive and well by sending your next manuscript to the editor, *Marine and Freshwater Research*, CSIRO Publishing, PO Box 1139, Collingwood, Vic. 3066.

ANNOUNCEMENTS

13th TAXONOMIC WORKSHOP

12th - 13th February 2001





HIRUDINEA, LEPIDOPTERA, MOLLUSCA, NEMATODA, ODONATA, PLECOPTERA

GUEST SPEAKERS:

Winston Ponder, Mike Hodda, Fred Govedich

Gunther Theischinger, Melanie Pearson, Edward Tsyrlin, John Hawking

VENUE

Lake Hume Resort, via Albury

Workshop Program

SUNDAY 11TH FEBRUARY 2001

1800-2100 **Pre-Workshop drinks**, Restaurant Bar, Lake Hume Resort

MONDAY 12TH FEBRUARY 2001

0830-0900 **Registration,** Conference Centre, Lake Hume Resort

0900-0915 **Official opening** "Welcome address", **Terry Hillman, Director MDFRC**

0915-1030 **Session 1.** The larvae of the Australian Synthemistidae, Gomphomacromiidae & Austrocorduliidae (Odonata: Anisoptera), **Gunther Theischinger (EPA, NSW)**

1100-1230 **Session 2.** An introduction to the taxonomy and ecology of aquatic caterpillars (Lepidoptera: Pyralidae), **John Hawking (MDFRC/CRCFE)**

1330-1500 **Session 3.** Identification of the primitive worms groups, **Mike Hodda (CSIRO)**

1530-1700 **Session 4.** Identification of freshwater Nematoda, **Mike Hodda (CSIRO)**

1900 **Evening session.** Barbecue, Barbecue pit, Lake Hume Resort.

TUESDAY 13TH FEBRUARY 2001

0900-1030 **Session 5.** Identification of the species of the family Hydrobiidae (Mollusca), **Winston Ponder (Aust. Mus.)**

1100-1230 **Session 6.** Identification of the species of the families Assimineidae, Viviparidae & Glacidorbidae (Mollusca), **Winston Ponder (Aust. Mus.)**

1330-1500 **Session 7.** Identification of the Australian leeches (Hirudinea), **Fredric Govedich (Monash Univ.)**

1530-1630 **Session 8.** Identification of the species of *Leptoperla* (Plecoptera: Gripoteryigidae), **Edward Tsyrlin (Monash Univ.)**

1630-1700 **Session 9.** Review of some recent literature on the ecology of invertebrates **John Hawking & Melaine Pearson (MDFRC/CRCFE)**

VENUE: Lake Hume Resort, 52 acres of parkland on the shores of Lake Hume at Hume Dam, 10 km east of Albury, along the Riverina Highway, at Hume Dam, NSW

COSTS: Registration fee includes lunches, morning and afternoon teas, handouts and Identification Guides. The guides will also be available for purchase by non-attendants.

CONFERENCE ENQUIRES: Rosie Busuttil (Ph 02-6058 2300) or John Hawking (Ph 02-60582340, hawkingj@mdfrc.canberra.edu.au), MDFRC, PO Box 921, ALBURY NSW 2640, Fax 02-6043 1626

Registration Form/Tax Invoice

Murray Darling Freshwater Research Centre. ABN 44622831492

Name :_____

Institution:_____

Postal Address:_____

_____

State:_____ **Post Code:**_____

Email:_____

Phone:_____ **Fax:**_____

REGISTRATION COSTS, All costs include GST

Ordinary Participants		Full Time Students	
Both days $240		Both days $170	
Day 1 only $140		Day 1 only $100	
Day 2 only $130		Day 2 only $80	
Evening BBQ $20		Evening BBQ $20	

Vegetarians please tick ☐

TOTAL		TOTAL	

Registration: Please complete this form and forward with payment to the "Taxonomic Workshop Coordinator", C/- MDFRC, PO Box 921, Albury NSW 2640, by **Friday 15th December 2000.** Please make cheques payable to the **Murray Darling Freshwater Research Centre.**

Email enquires: enquires@mdfrc.canberra.edu.au

ACCOMMODATION

Accommodation is available on site at the conference venue at Lake Hume Resort. Participants should arrange their accommodation through the Lake Hume Resort, who have Motel and Heritage Workers Cottages or through the Lake Hume Tourist Park, who have Units and Caravans. All accommodation arrangements should be made directly through the Resort or Tourist Park. Breakfast is available at both the Resort and Tourist Park. The tariffs for both are listed separately below:

Lake Hume Resort

Motels: 20 rooms of our 26 unit motel complex comprise of a double and single bed, full ensuite

Motel Units 3 Star: Tariff including GST	Cost$
Single/Twin/Double – 1 or 2 persons	68
Triple – 3 persons	78

Heritage Workers Cottages: Our Cottages have been compared in size with the average family home With the variety of 2 or 3 bedrooms. Each cottage has a full sized kitchen, complete with oven, basic cooking utensils, kettle, toaster, crockery, cutlery, fridge, air-conditioner, colour television, telephone, separate toilet, shower/bath. Beds have pillows and light doonas but no linen. You will need to bring bed and bath linen. Linen can be hired from the Resort.

Heritage Workers Cottages 3 ½ Star: (Tariff based on 2 Adults per night including GST)
All have 1 Double Bed & 4 Single Beds (some Bunks)

		Cottage No	Cost$
Conference Row	2 Bedroom	1,2,3,4,5,8,9	71
	3 Bedroom	6,7	81
BBQ Pit Row	2 Bedroom	12,13,16,17,22,23	81
	3 Bedroom	10,14,15,18,20,21,24,25,26	86
Poolside Row	2 Bedroom	27,28,29,30,33,34,35,38	90
	3 Bedroom	31,36,37,39	90
	3 Bedroom	32 (1 Queen, 1 Double, 3 Single) Includes linen	135
Extra Persons	Adults – 16 years & over		6
	Child – 3-15 years		3

Breakfast: Continental and full breakfast is available at the Lake Hume Resort Restaurant.

Bookings and enquires: Telephone 02 60264444 Reservations 1800 021 929 Fax 02 6026 4572, Email. lakehume@dragnet.com.au, PO Box 626 (Riverina Highway) Albury NSW 2640

Lake Hume Tourist Park

Cabins: 4-6 berth cabins are available for hire/share for $60.50 The cabins contain a toilet and shower. Blankets are supplied, but no linen, so you need to bring linen or a sleeping bag.
Bunkhouse: Backpacker style accommodation is available in the Bunkhouse, $12.10 night Bring a sleeping bag and pillow.
Camping: Powered and unpowered tent sites are available.
Breakfast: Continental to full breakfast is available from the General Store at Lake Hume Tourist Park
Bookings and enquires: General Store (Greg & Joanne Podger) Ph. 02-60264677, Fax 02-264081

EXPRESSIONS OF INTEREST: THE WETLANDS CENTRE AUSTRALIA

The Wetlands Centre Australia is seeking Expressions of Interest from Senior Ecologists with appropriate qualifications and experience, especially in the field of Wetland Ecology, who would be interested in taking over the management of SWC Consultancy, the research and consulting arm of The Wetlands Centre.

The person we are looking for will have from 5 to 10 years experience, be a self starter with the ability to undertake all facets of ecological consultancy work using a quality approach and have some managerial experience.

Although the Wetlands Centre has maintained a consultancy arm for many years, there is now a need to refocus the structure and area of operations of the entity trading as SWC Consultancy. It is envisaged this person would initially be involved in a review of operations and the relevant market place. The position would also involve managerial responsibilities, management of associated staff, marketing of services and tendering for consultancies. The position would be full-time.

The Hunter Region has a high level of wetland-related activity which offers numerous opportunities. In addition, this position presents a unique opportunity to work within the grounds of a fully restored wetland ecosystem which is fully owned and managed by a community organization dedicated to the conservation of wetlands.

Interested persons with suitable qualifications and experience are invited contact Chris Morris (CEO) on 4951 6466 or fax 4950 1875 or by email at cmorris@wetlands.org.au. Alternately they can apply in writing providing evidence of their success and experience to:

Senior Ecologist Position
The Wetlands Centre Australia
PO Box 292
WALLSEND NSW 2287

An information package is also available.

"Environmental Planning and Evaluation Guidelines for Rivers and Floodplains"

The Queensland Environmental Protection Agency (QEPA) and its research partners have recently been funded by LWRRDC (project QEH3) to develop national environmental planning and evaluation guidelines for rivers and floodplains. The QEPA has been developing a framework which aims to provide a clear direction on how the conservation values of waterways should be assessed and protected and how water extraction and water infrastructure development proposals should be evaluated, particularly in terms of how the ecological sustainable limits to the development of waterways should be established. Guidelines are being developed to assist with implementing this framework for waterways' protection.

This project aims to take these guidelines to a national level, with a series of workshops in all Australian capital cities. The aim of the QEPA's work is to develop conservation strategies to complement development strategies, as well as providing greater planning certainty for water resource developers (e.g. by informing them of high conservation value areas).

The main purpose of this item is to seek expressions of interest from experienced practitioners in relevant organisations to attend the workshop in your State or Territory in October 2000 (see http://www.rivers.aus.net/whatsnew.htm for details of the project, how to register your interest and suggested listing of interested organisations). Scoping papers on each guideline will be discussed at the workshops and feedback sought from attendees on how to make the guidelines most useful to their State. This feedback will be used in drafting the national guidelines which will then be offered to interested attendees for comment before finalising the guidelines for LWRRDC.

The guidelines are:

- **Conservation Value Guideline** describing a method for defining the conservation value of waterways;
- **Conservation Planning Guideline** on developing conservation strategies (or plans);
- **Sustainability Guideline** to identify the state of knowledge on ecological sustainability of waterways; and
- **Evaluation Guideline** for evaluating/assessing ecological sustainability of water resource development plans and projects.

The intent of the guideline package is to complement the existing tools available for waterways' rehabilitation (e.g. Rutherfurd et al, 2000 Rehabilitation Manual for Australian Streams LWRRDC and CRCCH) with a toolkit focused on waterways' protection. The guidelines will also provide a systematic basis for collecting appropriate baseline data and research to support planning and decision making.

Information on the project, including scoping papers and draft guidelines, will continue to be posted at the following website:
http://www.rivers.aus.net/whatsnew.htm

To register your interest in attending the workshop in your State/Territory, please email the project administrator, Sandy Coulter: sandy.coulter@env.qld.gov.au
with your details and a short summary of your experience that relates to the project.

Final details on the workshops will be advised in September.

The project manager, John Bennett (07-32276453 or john.bennett@env.qld.gov.au), can be contacted for technical enquiries.

THREATENED OR ENDANGERED SPECIES

Members of the ASL community are invited to make submissions to the NSW Fisheries Scientific Committee regarding Threatened or Endangered Species, Populations or Ecological Communities, as well as Key Threatening Processes, within the state limits of New South Wales. The Fisheries Scientific Committee was established under Part 7A of the Fisheries Management Act 1994, as an independent body. The main functions of the Committee are related to: the listing of endangered species, populations or ecological communities, vulnerable species and key threatening processes; advising the Minister on the identification of critical habitat and reviewing draft joint management agreements and the performance of parties under the agreements. The Committee is consists of seven scientists, who together cover the areas of marine and freshwater finfish, invertebrates and marine vegetation including algae.

Submissions on endangered or threatened aquatic invertebrate species are encouraged. Please see the FSC web site at http://www.fsc.nsw.gov.au/for information on how to make a submission, as well as for other information such as lists of species proposed to be, or already listed. Proposed recommendations currently include *Branchinella buchananensis* - Buchanans Fairy Shrimp, *Craterocephalus fluviatilis* – Murray Hardyhead, and *Notopala sublineata* - River Snail.For more information, contact:

A/Executive Officer Ms Kylie Russell
Fisheries Scientific Committee
c\o NSW Fisheries
Taylors Beach Road
Taylors Beach NSW 2316
Tel: 02 4982 1232
Fax: 02 4916 3880
Email: fsc@fisheries.nsw.gov.au
Website:

From: "George (Buz) Wilson" <BuzW@austmus.gov.au>

RECORD LINE-UP IN 2001 EUREKA PRIZES

The Australian Museum is proud to announce the launch of the 2001 Eureka Prizes - Australia's pre-eminent national science awards.

The 2001 series is the biggest ever, with three new prizes – for biodiversity research (sponsored by the Royal Botanic Gardens Sydney), for a science book (sponsored by Reed New Holland) and for earth, environmental and planetary sciences in secondary schools (sponsored by Macquarie University). Other Prizes cover environmental and scientific research and journalism, environmental education programs, industry commitment to science, critical thinking, engineering innovation, secondary school biological sciences and promotion of science.

With a record thirteen prizes on offer worth over $120,000, the Eureka Prizes are now the most comprehensive science awards in Australia. They are a unique cooperative partnership between the federal government, the NSW state government, educational institutions and a range of private sector organisations and companies designed to raise the profile of science in the community.

The vitality of the Prizes relies on the efforts of people and organisations across Australia in identifying suitable candidates for these prestigious awards. Your help in both promoting the Prizes, and in entering/nominating candidates, will ensure that the Eureka Prizes continue to highlight Australia's outstanding scientific and technological achievements.

Entries/nominations close on Friday 9 February 2001, with the winners announced at an award ceremony at the Australian Museum on 15 May 2001 and profiled on Quantum, ABC TV's award-winning national science program, on 17 May 2001. Further details and entry forms on all Prizes are available from the Australian Museum's webpage at www.austmus.gov.au/eureka or from 02 9320 6230.

Roger Muller
Australian Museum

AUSTRALIAN CHAPTER OF THE SOCIETY OF WETLAND SCIENTISTS

The Society of Wetland Scientists is a non-profit organisation founded in 1980 to promote wetland science and the exchange of information related to wetlands.

The objectives of the Society are:
to operate solely and exclusively as a charitable and educational organization to foster conservation and understanding of wetlands,
to advance public education and enlightenment concerning wetland resources,
to provide an independent forum for an interchange of ideas and data developed within wetland science,
to develop and encourage wetland science as a distinct discipline by supporting student education, curriculum development, and research,
to encourage and evaluate the educational, scientific, and technological development and advancement of all branches of wetland science and practice, and
to encourage the knowledgeable management of wetland resources.

The Society continues to grow and has over 4000 members from many countries. The Society holds an annual meeting for the presentation of scientific and technical information and maintains numerous other programs in support of student research and wetland science.

Approval for the creation of the Australian Chapter of SWS was granted on 11 August 2000 at the SWS 2000 annual meeting in Quebec, Canada. The Australian Chapter was founded with the intent of bringing together wetland scientists and other professionals from around Australia (and Oceania) who share common interests in wetland science and management. The Australian Chapter is the first chapter located in a country outside of North America, a fact of which we are quite proud. In keeping with Australia's diversity and wealth of wetlands, the SWS Australian Chapter's interests in wetlands encompass a wide variety of fascinating wetland ecosystems, from alpine bogs in Victoria to tropical wetlands in Northern Territory; from mangrove swamps in Western Australia to billabongs along the Murray-Darling river system in New South Wales; and from seagrass beds on the Great Barrier Reef in Queensland to ephemeral salt lakes in South Australia.

Activities of the Australian Chapter will include a newsletter (web-based), as well as an annual meeting/field trips. Additional information can be obtained at the chapter's website: http://www.sws.org/regional/australia/

From Paul DuBowy <bipjd@cc.newcastle.edu.au>

VSAP Update – 4 September 2000

VICTORIAN STORMWATER ACTION PROGRAM

The Victorian Stormwater Action Program (VSAP) was launched in June 2000. It will assist local government and catchment managers with adoption of improved environmental practice for urban stormwater management. The Governments $22.5 million (over the next 3 years) will aid the implementation of 'approved' Urban Stormwater Management Plans (SWMPs).

VSAP will be directed by the Victorian Stormwater Advisory Committee (VSAC). VSAC will set strategic direction, formally approve plans and decide on the allocation of funding. A technical reference group will be convened to provide technical advice and support to VSAC. It is intended that this group will be involved in the assessment of any applications for funding.

The Program is being rolled out by the Stormwater Team, located at EPA head office, Herald Weekly Times building, Southbank. Documents that outline the process and provide guidance for the different parts of the Program are currently being produced. Once approved by the VSAC, they will become available to all interested parties.

The current VSAP priorities are:

- Appointment of VSAC members ;
- VSAC endorsement of the 'approval checklist' for an urban SWMP;
- producing information that outlines the key roles and responsibilities of the main players, as well as providing information to help key stakeholders participate effectively in the process of developing an urban SWMP; and
- producing the grants application and associated guidelines.

Information about the program can be obtained from:

Geoff Ralphs 9695 2549
Marianne Robertson 9695 2696

180 MINUTES

MINUTES OF ASL TELECONFERENCE, TUESDAY 28 MARCH 2000

Present P.Horwitz, D.Nias, M.Hart, G.Jones, R.O'Connor, R.Butcher, R.Marchant; apologies from: J.Davis, J.Chambers

1. Minutes of last executive meeting (held in NZ) accepted.
2. Finances: M.Hart noted there had been a slight decline in reserves since the last executive meeting. The reserves now approximate $52000. Income from subscriptions was spent on the newsletter, telephone calls and other office costs. Thus discretionary expenditure was coming from reserves. After the GST is introduced in July costs will be uncertain and M.Hart's advice was to review ASL expenditure after 12 months of experience with the GST. It may be necessary then to increase subscriptions. ASL will apply for an Australian Business Number (ABN) but the society does not have to register for GST because turnover is less than $100,000.
3. Postgraduate workshop: executive agreed to give $2000 to the organisers of this year's workshop to be held in Hobart in April.
4. SIL request: the $3000 donated by Intecol for SIL2001, but held by ASL, is to be sent to the SIL organisers at Monash University. P Horwitz suggested that ASL could provide sponsorship in the form of support for postgraduates to attend the congress. ASL could support 5-10 students at a total cost of $2000-3000 and may favour those from regions remote from Melbourne. P.Horwitz also suggested that the ASL should have a display stand at SIL2001. Such a display could be mounted on fold-away boards which could be re-used. M.Hart and P.Horwitz will get quotes for these display boards. The executive supported these initiatives.
5. Vic chapter: R.Butcher informed the executive that 6 meetings had been planned for 2000 starting with a joint meeting of AMSA and ASL in May. She requested a maximum of $135 to cover speakers' expenses but did not think all this would be needed. The executive agreed to this expenditure.
6. Challenges policy document: it was estimated that $250 might be needed to publish this. The executive will have to approve greater expenditure.
7. Congress in Darwin: M.Finlayson summarised current arrangements: registration forms, accommodation details and abstract requirements are on the web site and a summary of this information has been included in the March newsletter; a maximum of 150 are expected to attend; all conference money is currently going through ERISS books; any profit from the meeting will come to the ASL; financial statements will be provided by the organisers to ASL after the meeting.
8. Snowy forum in Darwin: this will consist of two sessions, the first outlining political and social impacts on the river, the second dealing with biology and geomorphology. Time for discussion will be available possibly resulting in a position statement on the Snowy from ASL
9. Australian Wetland Forum in Darwin: this session will emphasise the contribution of science to management and conservation of wetlands. Funds are being sought to publish some of the contributions.
10. Student travel awards: it was agreed that a maximum of $2250 would be available.
11. Australian Wetland Alliance: Deb Nias offered to be the ASL contact for this group.
12. Policy standing committee: P.Horwitz will send relevant material be email.
13. Submission on Queensland Water Allocation: G.Jones will circulate a submission for comment to the executive. He was concerned whether ASL had a policy on interbasin water transfers. The ASL submission to the water allocation process in NSW apparently made no reference to such transfers.

ASL EXECUTIVE MEETING, 8TH JULY 2000, DARWIN NT

Present: P.Horwitz, R.Marchant, J.Chambers, K.Muller, D.Nias, M.Finlayson, J.Davis

1. D.Nias suggested that the ASL make an award to a promising younger scientist. Such an award could go to someone within 5 years of receiving their PhD, who shows exceptional promise. P.Horwitz and J.Chambers fully endorsed this proposal and suggested that it be brought up again at the AGM where it could be discussed with members.

2. Budget: the secretary re-iterated Margaret Hart's warning that expenditure, especially discretionary expenditure, needs to be treated carefully in the coming year because the society's reserves are diminishing.

3. The secretary also informed the executive that Business Affairs (Dept Justice ,Vic) insist that the AGM and thus the annual return be made within 5 months of the end of the financial year. The ASL's financial year is the calendar year and thus the return should be made by the end of May This has not occurred in recent years. Some discussion ensued but there is no obvious way of resolving this issue except to hold AGMs earlier. It is unlikely that this can be achieved.

4. Membership promotion: it was suggested that the webmaster (Simon Josey) may be in a good position to promote membership of the society.

AGM OF THE AUSTRALIAN SOCIETY FOR LIMNOLOGY, DARWIN NT, SUNDAY 9TH JULY 2000

(p = proposed, s = seconded)

1. Adoption of agenda (p = J.Hawking, s = D.Nias), carried.

2. Apologies: I.Growns, R.Butcher, G.Jones, J.Jackson

3. Acceptance of minutes of last AGM (p = K.Muller, s = M.Finlayson), carried.

4. President's report: P.Horwitz thanked M.Finlayson, A,Spiers and M.McKaige for the organisation of the Darwin congress. He then summarised ASL activities over the last two years emphasising the changing role of the executive, the newsletter and website and the value of the state chapters. A full account of his remarks can be found on page 5 of the June2000 (Vol 38, no.2) newsletter. (p = R.Marchant, s = J.Growns), carried.

5. Secretary's report: R.Marchant reported that only one teleconference had been held (March 2000) since the last AGM (in Dec 1999). The minutes have not yet been published but will be in a future newsletter. He then mentioned a particular difficulty the society faced: Business Affairs (Dept Justice ,Vic) insist that the AGM and thus the annual return be made within 5 months of the end of the financial year. The ASL's financial year is the calendar year and thus the return should be made by the end of May. This has not occurred in recent years. There is no obvious way of resolving this issue except to hold AGMs earlier. It is unlikely that this can be achieved. (p = J.Hawking, s = E.Turak)

6. Treasurer/ membership officer's report (from Margaret Hart): My apologies for not being able to attend the Annual General Meeting. The membership of the Society at 30 June 2000

Life Members:	25
10 year member	18
Ordinary member	468
Student member:	127
Institutional member:	19
Total 659	

ASL has welcomed a number of new members since the last report. However we have also lost a number of members through change in members fields, retirements and deletion from the data base due to a non payment of subscriptions. Overall the society has grown by 23 in nine months. The website has generated a number of new members. The process works particularly well, with the membership information and credit card payment being faxed to me by the ASL web master Simon.

The membership subscription notices will we sent out in July 2000 and will carry the small fee increase (passed at the AGM in New Zealand). The introduction of the GST will see an increase in a number of aspects of ASL. I believe ASL should run a year before making a decision on whether to register for the GST. ASL has registered for and has received as ABN, as well as a tax file number.

The membership directory was produced and posted with the December 1999 issue of the newsletter. Thank you to members for their support over the year. I offer myself to the position of Membership Officer/Treasurer of the Australian Society for Limnology Inc for the year 2000/2001.

The financial statement is attached. Report accepted (p = M. Douglas, s = F. Bouckaert)

7. Treasurer's honorarium; R. Marchant proposed (s = J. Harris) a $1500 honorarium for Margaret Hart; carried.

8. Auditor's report: " In our opinion the financial report presents fairly the financial position of the Australian Society for Limnology Inc. as at 31 December 1999 and the results of its operations for the year then ended". Signed L. C. Coster

9. Newsletter editor's report (from I. Growns): The June 2000 issue of the newsletter represents my seventh publication as editor I am still enjoying the experience and am happy to continue in this capacity for the foreseeable future.

   The ball for an electronic copy of the newsletter is firmly in my court and my apologies for not progressing this matter. A model for the implementation needs to be put forward to the executive for endorsement. Given the new membership of the executive this may be an appropriate time to carry this issue forward.

   My only real concern for the newsletter is the lack of commitment by members for contributions to the gossip section. It has been my favourite section of the newsletter since I joined ASL a decade ago and I think that it is the heart of the newsletter. I would have to go back through lots of issues to see if the contributions have actually decreased through time but between 7 and 15 contributions have been made to the gossip section since I have been editor. I will raise this issue at an exec meeting to see if there is anything that the management of ASL can do to bludgeon members for contributions.

   The production process for the newsletter has not changed for the last six issues with Border Multiprint doing the printing and Kalianna Pty Ltd doing the bagging and delivering the newsletter to the post office. I chose both of these organisations because they were in Albury/Wodonga where I worked when I became editor. The June issue was produced using the same companies although I now work in Port Stephens and I see no reason to change.

10. Webmaster's report (from Simon Josey): The ASL webpage is showing a high level of interest with over 2000 visitors to the homepage since beginning of March 2000. The ASL congress page has had about 600 visitors during this time. The - ASL Newsflash - page is usually one of the first pages visitors will view. This page is regularly updated with information that may be of interest to members (which usually consists of items posted to the ASL email list), and any updates to the webpage.

    Registration for the ASL congress was done via the ASL website this year (with payment via snail mail). Abbie Spiers informs me that this has worked well. This page had 221 hits from March to June.

    There has been limited interest in the members pages. The member's page lists member's limnology-related websites (with some info on what it is about). If Margaret's database will allow her to do this, I will request an output of member's email addresses and do a mailout to request members limnology related Websites (if they want them displayed on the ASL website). We could also do this to promote to members the ASL email list.

The employment opportunities page has been getting a bit of interest (over 400 hits) - this page contains available positions in the limnology industry as posted to the ASL email list. It is supposed to be for member's use only (in advertising), but unless I check everyone's membership on the ASL email list advertising positions, then sometimes positions advertised will be from people who are not members.

Membership via the web has been doing moderately well, with over 40 membership subscriptions to date. The subscription form is secure (encrypted and password protected), and I have not heard of any problems with it.

The ASL email list has been doing well, with 304 members as of 1 June.

11. ASL Medal Award committee report: P.Horwitz reported that one nomination had been received but had been returned to the nominator for more information. PH noted that only two nominations had been received in the last two years and asked members to send in more nominations.

12. Student Travel Award committee report: R.Marchant reported that three students had each received $500 to assist with their travel costs to Darwin: J. Ling (Sydney), P. Hancock (Armidale) and M. van der Wielen (Adelaide).

13. Door prize (from A. Boulton): The Door Prize is one of ASL's most prestigious and coveted awards, and competition for its achievement is always brisk. It originated as the door of a dismantled drying oven that was transported from Monash University to the ASL meeting (in Mt Gambier, 1984) and presented to the first recipient Dr Patrick De Deckker who regrettably did not fly to the next ASL meeting with the oven door ready to pass on... Tim Doeg is the usual presenter of the annual Door Prize, and often comments on the meteoric rise in fame and fortune of all awardees. Unfortunately, Tim was unable to attend this year's meeting and I present this report on his behalf.

This year, as always, competition was stiff. Even outsiders made an early attempt to obtain the DP by swimming nude across Darwin Harbour on the evening at East Point Reserve and Jane Suggit apparently has the photos to prove it. [After presentation of the DP, it was revealed that the 'outsiders' may have actually been bona fide members of ASL - we await the photographic evidence].

There seemed to be a theme to the nominations for DP this year: the thin line between art, data presentation, science, and communication. Opening the attack was the effort by George Begg who physically tossed one of his data points (a cane toad) into the audience to illustrate his message. This contrasted sharply with Eric Dorfman who pointed out that as we had all seen data before, there was really no point in showing us any of it. However, Kevin Boland tried to resuscitate the importance of data in a later talk by saying 'getting serious now guys, this is data...' Sometimes the data were a bit hard to believe - Jenny Davis stated that she had been collecting data on Lake Monger since the 1880s but she hides her century well. John Harris showed a memorable slide of a pool that he claimed showed some 40 galaxids within - most of us spent 5 minutes staring at it trying to see just one of them. Also having problems with

disappearing data was Max Finlayson whose Powerpoint display eradicated a frog and waterbird from his slide although he kept insisting that they should be there.

The art of data transformation was evident also. Bernie Cockayne aroused some interest in his VD ratio for assessing habitat while Chester Merrick confessed that Fast Fourier transformations could make some of his data look so good that he could hardly believe it himself. Some researchers even seemed to transform their data in culinary fashion as shown by Dorothy Bell and her 'duck digestion experiment'. But not all things can be eaten as Jacob John pointed out for a neurotoxic *Anabaena* "This one's bad - you come out mad".

But there has to be a winner! Crossing the thin line between science, art, and religion, the prestigious DP this year goes to Ben Gawne who presented a series of slides of 'artistic works' designed to enhance communication, including some of his own bar graphs. Building to a pious fervour, Brother Ben's finale was a first for ASL - a talk that contained a slide of a large stained-glass window representing the wonders and achievements of Christianity that he claimed was good evidence of the effectiveness of religious advertising. The DP is awarded in 2000 for such an effective and broad-ranging encapsulation of limnological issues in a religious context, and sets a truly holy standard for next year.

14. Student prizes (announced by P. Boon):
    (a) for the best oral presentation by a PhD or Masters student – Glenn Johnstone;
    (b) for the best oral presentation by an honours student – Lien Sim
    (c) for the best poster by a student – Sarah Cartwright; commendations went to Fiona Butson and Claire McKenny.

14. 40th Congress (from M.Hart):

Echuca/Moama on the Murray River September 2001

The Rich River Golf and Country Club is 5 km out of Moama on the NSW side of the Murray River. The club is situated within very pleasant surroundings including a 36 hole golf course, tennis courts, bowling greens etc. It is also a gaming venue.

The larger of the conference rooms, the Jade Room, will seat 270, the Sunset Room, 70, and the smaller Board Room, 30; the Tatalia Room is available after 10.30am and will seat 100.

Technical equipment is available and includes: microphones, electronic & standard whiteboards, TV & VHS videos, overhead and slide projectors.

Other technical equipment is available. A hire charge will apply.

Breakfast, lunch and dinner is available on site. A BBQ is also available.

There is a Motel on site with accommodation for approx.100, there are a number of motels close by. I have booked the Rich River Motel as well as the Cadell Motor Inn. The caravan park is a "good walk" from Rich River. I will make a booking at the caravan park in October. A courtesy bus is available. A deposit has been paid to secure the date. Costs etc have yet to be set.

15. Future congresses: M.Lund is prepared to organise a meeting in the Margaret River area of WA for 2002.

16. Election of the executive:

President: J.Chambers (p = R.Marchant, s = K.Muller)

Vice- President: A. Boulton (p = J.Chambers, s = J.Growns)

Secretary: R.Marchant (p = J.Davis, s = J.Chambers)

Treasurer/membership officer: M.Hart (p = R.Marchant, s = E. Turak)

State members :Vic - M. Shirley (p = R.Butcher, s = D.Nias)

Tas – J. Gooderham (p = J. Jackson, s = M. Read)

Qld - J. Marshall (p = S. Grinter, s = A. Boulton)

WA – M. Maguire (p = J.Davis, s = J.Growns)

SA – K. Muller (p = J.Growns, s = J. Hawking)

NSW- J. Growns (p = J. Hawking, s = A. Boulton

NSW - D.Nias (p = M.Finlayson, s = J.Chambers)

NT – A. Spiers (p = P.Horwitz, s = M.Finlayson)

All were elected as there was only one nomination for each post.

17. R.Marchant proposed (s = K.Muller) that Coster Galgut be re-elected as the auditor; carried.

18. General business:

(i) Snowy River forum: P.Horwitz thanked the chairmen and speakers who presented this forum. He thought a lot had been learnt from this forum and that it had been an opportunity for informed comment on an important freshwater issue. A position statement had been drafted by S. Lake, J. Harris, D. Nias and M.Finlayson; this will be sent out for comment by members. P.Horwitz proposed a vote of thanks for D.Nias and T.Doeg who were instrumental in initiating this forum; carried with acclamation.

(ii) Carp policy: J. Harris circulated a draft of this policy, which had also been published in the June 2000 newsletter. This draft will go to the standing committee on policy and then the executive for approval before being published by ASL.

(iii) Young researcher award: P.Horwitz proposed that such an award be made to fill the gap between the ASL medal and the student prizes. After some discussion about selection criteria and the models that are used by other societies to make such awards PH proposed that: "the executive be asked to investigate models for rewarding young limnological achievers" (s = B. Gawne); carried.

19. J. Chambers proposed a vote of thanks to Pierre Horwitz for the wonderful job he has done as ASL president over the last two years; carried with acclamation.

Meeting closed at 7pm. Richard Marchant, ASL secretary

AUSTRALIAN SOCIETY FOR LIMNOLOGY INC

REG. NO. A20309K

PROFIT AND LOSS STATEMENT FOR YEAR ENDED 31 DECEMBER 1999

	1999 $	1998 $
INCOME		
Bank Interest	2,836	3,619
Congress	-	54,444
Special Publications	20	100
Subscriptions - Members	13,605	11,020
- Students	1,400	1,033
- Institutions	70	230
-10 Year	325	975
Sundry	25	-
TOTAL INCOME	18,281	71,421
EXPENSES		
Audit Fees	740	728
Bank Charges	504	831
Telephone	1,629	1,389
Congress	-	56,664
- Student Travel Award	4,500	1,000
- Student Prize	400	300
- Books/Artwork/Printing	878	226
Depreciation	492	820
Donations	700	-
Graphic Workshop (ASL Medal)	1,823	-
Honorarium	1,500	1,500
Insurance - Computer	-	200
Miscellaneous	33	34
Newsletter	14,805	5,963
Special Publication	-	4,014
Sponsorship - Fitzroy River	-	1,000
Stationery/Printing/Office Supplies/Postage	899	686
Subscriptions/Workshops - FASTS	2,505	2,205
Vic Chapter	160	-
TOTAL EXPENSES	31,567	77,561
NET DEFICIT FOR YEAR	$13,286	$6,141
RETAINED SURPLUS AT START OF YEAR	$67,114	$73,255
RETAINED SURPLUS AT END OF YEAR	$53,828	$67,114

AUSTRALIAN SOCIETY FOR LIMNOLOGY INC

REG. NO. A20309K

BALANCE SHEET AS AT 31 DECEMBER 1999

	1999 $	1998 $
MEMBERS FUNDS		
Retained Surplus	53,828	67,114
Represented by:		
CURRENT ASSETS		
General Bank Account	4,769	14,327
A.N.Z. Trustees Common Fund V2 Plus	17,389	21,556
N.A.B. Deposit at call	19,862	15,000
N.A.B. Deposit at call	14,070	18,000
TOTAL CURRENT ASSETS	56,089	68,883
NON CURRENT ASSETS		
Office Equipment	5,653	5,653
less Provision for Depreciation	4,915	4,422
TOTAL NON CURRENT ASSETS	738	1,231
TOTAL ASSETS	56,828	70,114
NON CURRENT LIABILITIES		
Advance - Intecol Conference Donation for SIL 2001	3,000	3,000
NET ASSETS	53,828	67,114

MINUTES OF ASL EXECUTIVE MEETING AFTER AGM, 9TH JULY 2000

1. The Snowy River Policy Document will be circulated on the list server for comment for a period of ten days. Snowy River committee will finalise document before ratification by the executive and submission before 26th July. Deb to contact Brett Miners for details.

2. New Policy Documents: Kerri Muller is interested in preparing one on Constructed wetlands. Jane Chambers will to check with Bill Williams on document regarding Urban Wetlands. People will be sought to create document on Dryland Salinity. Jane will invite Paul Bailey to draft this with colleagues.

3. Young Researcher Award: this idea will be developed by committee. Andrew Boulton and Michael Shirley agreed to be on the committee. Ben Gawne will be invited and student will be sought also.

4 Executive will check list of strengths/skills put forward at the AGM as areas that the executive should cover. Executive members will report back to Jane Chambers highlighting in which areas they might be able to contribute.

5. Anne Jensen put forward to Jane that Wetland Care 2001 congress be back to back with ASL Agreed by the executive.

6. Kerri Muller put forward the idea of a Lower Murray Forum, similar in scope to the Snowy River forum at this congress, to occur between the Wetland Care and ASL meetings in 2001. Kerri will develop this further.

7. ASL Policy Standing Committee needs to be reinstated. Call on the listserver for nominations for 2 general members to be on the committee.

8. Society of Wetland Scientists will set up Australian Chapter. Jane Chambers will seek comment from Max Finlayson, Marg Brock, Jane Roberts as to whether any collaboration/diplomatic issues need to be raised.

9. Post graduate workshop was proposed by Andrew Boulton for next congress (2001) to make ASL more affable for students. Andrew will develop this idea.

I'VE BEEN TO....

39TH ASL ANNUAL CONGRESS, 7-10 JULY 2000, DARWIN

After the glaciers and merimictic Lakes from last year's conference (where several of us wanted to go but did not quite make it), this year a tropical destination: Darwin.

Friday: The conference began with Gerry Wood, president of the Litchfield Shire Council, giving an informative and entertaining overview of the wetlands around Darwin and management issues faced by local government and the community in the Top End. Plenary speaker, Dr Cathy Pringle, followed with a global perspective on managing hydrologic connectivity to protect the biological integrity of reserves. Friday morning sessions covered environmental flows and water quality, and the afternoon was dedicated to a Snowy River forum, where the complex issues of the Snowy River and environmental flows were presented and debated in detail.

At the end of the day there were drinks and very nice fingerfood available at NT Parliament House, where the Minister for Lands, Planning and Environment addressed the Society and tried to tongue twist our much-debated name, wondering why our explanatory slogan was nowhere to be found. Catching-up time for many of us, and after being warmly welcomed by the Territorians it was time to check out some of the Darwin pubs. The Irish beer flowed freely that evening, so much so that the famous food wasn't even tried!

Saturday: The topics of sessions and presentations varied widely and spanned regions from montane to tropical. Science wasn't the only thing an the agenda either, with the wetland forum kicking off with some wetland stories. Charles Godjuwa's presentation gave everyone a fascinating Aboriginal perspective on the value of rivers and wetlands in Arnhem Land. The stories kept flowing and were followed by WWF chairing sessions on wetland initiatives/policies to stop and reverse the loss and degradation of wetlands. The ensuing discussions should result in ASL/WWF putting together a policy document and since the time of the discussions was limited many of us are keen to see what will be in the document. Conference dinner that night was set at majestic East Point, and the band provided the tropical ambience that went so well together with the palm trees and the views over the bay.

Sunday: The next day was getting very busy, with choices to be made between sessions with topics as diverse as tropical wetlands, restoration, assessment of uranium mining, stream monitoring, remote sensing, fish and waterbirds, and monitoring approaches. There was also a diverse and stimulating session on science and communication, which explored ideas for better communicating science to wetland managers and the general public. Later, at the AGM, many thanks were voiced for some of the hardworking contributing members who could not all be present. We may have forgotten some, but remember the newsletter editor, Ivor Growns, and website master, Simon Josey, being two of them. Another night in downtown Darwin to continue those conversations from the night before...

Monday: Another busy day followed, with split sessions for the entire day covering topics such as monitoring approaches, tropical wetland pest species and fish kills, river dynamics, algal/cyanobacteria blooms and nutrient processes. A small but enthusiastic group of people got together in the morning for a workshop on Communication, Education and Public Awareness (CEPA) – 'getting wetland messages out effectively'.

The day wound up with presentation of the door prize to Ben Gawne, and a big thank you to Abbie Spiers and Maryanne McKaige for the excellent job they did in organising the conference. At the end of the conference we watched everyone drift out the door into the late afternoon sun - some returning to local or interstate homes, and others preparing for field trips on the following day - and we hope they all left with a renewed sense of purpose and energy to tackle another year of limnology challenges! We certainly felt there was plenty to reflect upon...See you all back again next year!

Frederick Bouckaert & Abbie Spiers

ASL 2000 Annual Congress, Darwin, July 2000.

To tell the truth conferences aren't really my idea of fun. Sitting still for any length of time is difficult enough for me, add short breaks where copious amounts of coffee are freely available and things get worse. As the days of the conference progress my attention span gradually narrows to become nearly non-existent, and my thoughts wander off in any direction except the ones the speakers are attempting to take them. So if you want my attention its best to have talks on a wide range of topics, put some personality into the presentations, and keep the socialising relaxed and informal. This years ASL congress in Darwin kept me attentive, interested, and relaxed.

Science can be rather blandly presented at times, while management and policy presentations are often down right mind numbing. Obviously, this is not always the case as many proved with their presentations this year. Ok, so not everyone enlivened the audience, but in most cases the speakers knowledge and enthusiasm for their topic were well expressed. It wasn't just the big guns, those academics and senior researchers with the experience and confidence to be relaxed (or at least appear so), that were easy to understand. Most of the speakers, regardless of their level of experience, did well in communicating their topics to the audience, which is the whole point of being at a conference in the first place. I now understand much more about environmental flows, the plight and politics of the Snowy, the condition, management, and restoration of Australia's wetlands, mitigation of cold water pollution from dams, dirt water models, fish in the mighty Burdekin, and much more on many other topics. If the speakers kept my attention long enough to teach me a thing or two on all this they did well, they communicated their main points and earned their keep.

My only real problem with this years Congress was it length. Four days worth of constantly changing topics is enough to tax even the most enthusiastic among us, a break in the middle was definitely needed. I got the feeling that many found the format of the inaugural Australian Wetland Forum on Day 2 of the Congress a little frustrating After hearing from a number of speakers, the audience moved off into small groups to discuss the sessions main themes, evaluating policy and involving a broad section of the community in halting and reversing wetland degradation.

A few people expressed the opinion that the final points reached by the end of the day should really have been the points the discussion begun with and built on. Obviously, observer hindsight will help formulate how these important forums are to be run in the future. Like any start this one may stumbled a little, not living up to expectations or going exactly to plan. However, the fact that it was run at all is great. To my way of thinking an organization like the ASL needs to do more than just present and watch presentations of the science we conduct. An open discussion is an excellent way to solidify opinions, learn from others, and to throw out perspectives that others may convince you are mistaken. Most importantly, it is an opportunity to use the collective brain of Australia's freshwater scientists to formulate policy positions and initiatives to promote wise use, rehabilitation, and conservation of our wetlands. Lets hope the initiative is taken up in the future and this initial forum becomes the foundation for an important collective effort by the ASL.

OK, lets face it, putting aside all the deep discussion of science, management. policy, etc, etc, at the end of the day were all here to have a beer or two with friends and colleagues. If you want to track down ecologists, or any scientist for that matter, you only need map the distribution of two things, beer and coffee! Ecologists will be milling around somewhere close to one in the morning, moving on mass to the other at dusk. The socialising suited the Northern Territory atmosphere, informal and relaxed. The NT Minister for Lands, Planning and Environment shouted everyone a drink or three at Parliament House and for a politician gave a mercifully short welcome speech. Dinner at Pee Wee's and the casual chat sessions at Rourke's Drift and the Mirrambeena Resort were both a great way to catch up with friends over a beer, or two, and to talk to the big guns. Being the only

freshwater ecologist at Wollongong Uni I don't often get the chance to casually chat to fellow researchers or to pick the brains of those with experience in this field. Being a pretty useless networker casual chats over a cool ale are the best way to get to know the people behind the names I see on papers.

The best part of the congress was kept until the end. No matter how informative the talks, how tasty the beer, or how relaxing the socialising, it was all topped off in five minutes by a four and a half metre Croc! The fleeting glimpse of this big fella sunbaking on the banks of the Mary River was definitely the highlight of the trip.

Thanks to all those who must have put considerable effort into all aspects of this years Congress See you all next year.

by

Glenn James Johnstone

A comment on Congress No 39 - Darwin, July 2000

Max Finlayson

The *real* event for ASLers in the NT was the congress in Darwin. The number of presentations by NT-based limnologists was impressive and again justifies ASL's decision to hold congresses in locations outside of the more heavily populated regions of Australia. (It could be an interesting extension to also include more non-resident limnologists in our meetings, but that may take the concept of a locally organised conference to another level of complexity and time-cost.).

The concept of organising a conference is easy, but the practice is much harder and I am sure all past organisers have appreciated the support and good-hearted nature of most participants.

In Darwin we deliberately set out to again alter the format of the conference and introduced opportunities for ASL scientists, managers and educators to mix and talk in formal and informal sessions with wetland conservationists, private enterprise persons, local groups and councils. These opportunities were scattered throughout the program. Given some recent debate within ASL I found the following amusing. "Our opening speaker, Gerry Wood, from a local council, noted that he was previously unaware of what 'limnology' was. As did Minister Daryl Manzie who hosted the official welcome and open." They now know, but we still have some distance to go with promoting a geater awareness of 'limnology'.

In this congress we also deliberately targeted some outputs in addition to the abstracts and program booklet. This entailed much more work and some of it is not yet complete. A resolution on the Snowy River was prepared and the Australian Wetland Forum strategy is in draft form and being reviewed before being made available for general comment. The AWF seemed to produce a mixed reaction to the stalwart scientific support that we assume characterises ASL. Given this not unexpected response I think it would be useful to further debate what type of society we want and hence, what type of membership.

In the meantime I'll pass on details of further contacts that develop with some of the individuals and groups that we invited to Darwin. Those on the ASL listserver will already know about the wetland forums (fora) that Wetland Care Australia is hosting in WA. And WWF certainly indicated opportunities that exist within the EPBC Act that is now being implemented by Environment Australia.

Myself and others have already expressed gratitude to those who helped organise ASL2000. Let me wish those involved with ASL2001 every success as they develop their model for the next event.

RAMSAR WETLANDS CONVENTION

Max Finlayson

This Convention is nowadays receiving more attention within Australia and elsewhere. The EPBC Act has in effect 'codified' national responsibilities for managing Ramsar listed sites. This is principally directed at management issues. At a federal level we have also seen continued support for the scientific and technical agenda of the Convention. This has been done primarily through the Convention's Scientific and Technical Review Panel (STRP). A summary of the last STRP meeting can be found at www.ramsar.org

Topics covered included – Millenium Ecosystem Assessment; impact assessment; allocation and management of water for maintaining ecological functions; integrating wetlands in ICZM; global review of wetland resources; wetland risk assessment; wetland inventory techniques; invasive species; peatlands; and climate change.

CONFERENCE CAPERS

CALL FOR PAPERS AND PARTICIPATION

First international Conference

WATER RESOURCES MANAGEMENT 2001

24 - 26 September 2001, Halkidiki, Greece

Organised by Wessex Institute of Technology, UK and University of Thessaloniki, Greece With the Collaboration of University of Delaware, USA Sponsored by National Ground Water Association USA (20% discount applies for NGWA members), USA and Progress in Water Resources Book Series (WIT Press), UK

FOR THE LATEST CONFERENCE INFORMATION VISIT
OUR WEB SITE AT:

http://www.wessex.ac.uk/conferences/2001/wrm01/

****

OBJECTIVES

The first international conference on Water Resources Management will present the recent technological and scientific developments associated with the management of surface and sub-surface water resources.

The meeting aims to bring together engineers, scientists and other professionals from many different countries, involved in research and development activities in a wide range of water resources and management topics.

The importance of this meeting cannot be over emphasised as water increasingly becomes a precious resource on which the well-being of future generations depend. Issues of water quality, quantity, management and planning, as well as other related topics are essential to the future of the world population.

Water related conferences organised by Wessex Institute of Technology, have been successfully held throughout the world over the last 25 years. This is mainly due to the willingness of colleagues within the international community to participate in the transfer of knowledge during these meetings. Water Resources Management 2001 is a natural product of these conferences and one which will build upon their previous success.

CONFERENCE TOPICS

* MANAGEMENT AND PLANNING
  Advanced Computer Systems, Multimedia and Internet Applications
  Decision Support Systems
  Floodplain Integration
  Groundwater Management
  Integrated Water Planning and Management

Land Use Regulations and Watershed Management
MIS and GIS Applications
Quality and Pollution Control
Reservoir Modelling and Simulation
Risk Analysis and Uncertainty Modelling
Runoff, Sediment and Pollutant Control
Storm Water Management
Wastewater Treatment and Management
Water Resources Systems
Watershed Management
Wetland Regulations and Management

* SUB-SURFACE FLOW
Coastal Aquifers
Flow in Heterogeneous Aquifers
Groundwater and Flow in Porous Media
Multiphase Flow
Parameter Estimation and Inverse Problems
Saltwater Intrusion
Subsurface Transport
Unsaturated Porous Media
* SURFACE FLOW
Free Surface Flow
Flow in Pipes and Open Channels
Coastal and Esturine Flow
Flow in Lakes, Lagoons and Reservoirs
Hydrological Modelling
Wave Propagation

CALL FOR PAPERS

Papers are invited on the topics outlined below and others falling within the scope of the Meeting. Abstracts of no more than 300 words should be submitted by mail, fax or email without delay.

Abstracts should clearly state the purpose, results and conclusions of the work to be described in the final paper. The final acceptance will be based on the full-length paper. The author must attend the conference to present the paper, if accepted. Each submitted paper is subject to a separate registration.

We strongly encourage the submission of abstracts by EMail.

Please submit your abstract with WATER RESOURCES MANAGEMENT 2001 in the subject line. Include your name, full address and conference topic.

EMAIL: slwalsh@wessex.ac.uk

SUBJECT: WATER RESOURCES MANAGEMENT 2001

For further instructions on paper submission, please see:

http://www.witpress.com/authors.htm#Conference

November 20-24, 2000: WATERWATCH NATIONAL CONFERENCE 2000 'The Next Bend in the River' Nathan Campus, Griffith University, Brisbane. Nadia Kingham, Wetlands Unit, Environment Australia, 02-6274-2312. Or Carillon Conference Management, phone:07-3368-2644 email: mail@ccm.com.au

27 November - 1 December 2000: The 2nd INTERNATIONAL CONFERENCE ON APPLICATIONS OF MACHINE LEARNING TO ECOLOGICAL MODELLING is being held in Adelaide, Australia. Sessions are scheduled covering topics relating to modelling the ecology of freshwater streams and lakes and fish stocks. For further details of registration please contact: Friedrich.Recknagel@Adelaide.edu.au

4- 8 December, 2000. Molluscs 2000 – UNDERSTANDING MOLLUSCAN DIVERSITY IN OUR REGION INTO THE 21ST CENTUARY. University of Sydney, Sydney. Contact Winston Ponder, Dept of Malacology, Australian Museum, 6 College St, Sydney, 2000 http://www.austmus.gov.au/science/division/invert/mal/malsoc/confer3.htm

OVERSEAS 2000

October 16 - 20, 2000: THIRD INTERNATIONAL SYMPOSIUM on
EXTANT AND FOSSIL CHAROPHYTES
will be held in NANJING, P. R. China under the auspices of the Chinese Acadmy of Sciences and the International Research Group on Charophytes.
Organizer : Prof. LU Hui-nan Nanjing Institute of Geology and Palaeontology Academia Sinica, 39, East Beijing Road, NANJING 210008, P.R. China
The Symposium is open to all aspects of Charophyte research (Charophytes s. str. = Charales) ORAL and POSTER presentations are welcome. The scientific sessions will be followed by a 2 1/2 day field trip in Jiangsu Province (around Nanjing). The official language of the Symposium will be English.
REGISTRATION FEES Participant Member US$120 Student Member US$ 60 Non-attending Member US$ 60 (Registration fees include meals and local transportation in Nanjing)
DEADLINE for registration and abstracts is JUNE 30, 2000. Invitations for obtaining visa will be sent immediately after receipt of your registration. Nanjing, the capital of the Jiangsu Province (3 Million inhabitants), can be easily reached by connection flights from any international airport in China (Shanghai, Beijing or Hongkong). If you are interested, please contact Qi-fei WANG, e-mail : qfwang@jlonline.com or Ingeborg SOULIE-MARSCHE, e-mail : marsche@isem.univ-montp2.fr
http://members.tripod.com/bruno.granier/3rd-charo.htm

FURTHER IN THE FUTURE

February 2001 28th International Association of Theoretical and Applied Limnology (SIL): Melbourne, Australia

February 2001 Symposium on the Role of Drought in Aquatic Ecosystems: Albury, Australia. If you would like to receive more information on the symposium, please send your contact details, area of expertise and whether or not you would like to present a paper or poster, to:-
The Organising Committee
Symposium on the Role of Drought in Aquatic Ecosystems
Murray-Darling Freshwater Research Centre and,

The CRC for Freshwater Ecology
PO Box 921
Albury, NSW Australia 2640
or e-mail: hump@mdfrc.canberra.edu.au (please include the word 'Symposium' in the subject heading).

28 JANUARY - 2 FEBRUARY 2001: XVIIth INTERNATIONAL SEAWEED SYMPOSIUM: CAPE TOWN, SOUTH AFRICA
Please also feel free to contact our website at:
http://www.uct.ac.za/conferences/iss
Please mail, fax or e-mail to:
ISS 2001
University of Cape Town
P O Box 34098
RHODES GIFT
7707 SOUTH AFRICA
ISS2001@botzoo.uct.ac.za

15-20 July 2001 9th International Congress on Invertebrate Reproduction and Development: Rhodes. University, Grahamstown, South Africa. Inquires Alan Hodgson, Rhodes University 6140 South Africa ph (+46) 6038526 fax (+46) 6224377.

August 2001 Seventh International Phycological Congress: Thessaloniki in north-eastern Greece. For more details, visit our website at: http://dictyocha.bio.auth.gr/7ipc2001 or try http://www.seaweed.ie/phycologia

31 August to 2nd September, 2001 - 16TH ASPAB CONFERENCE in 2001, Heron Island, Qld, Contact Philip Orr, ASPAB Vice-President, Chairman of the 16th ASPAB Conference Organising Committee

August, 2004. 29th International Association of Theoretical and Applied Limnology (SIL):
Helsinki, Finland.

ASL VOLUNTEERS

The following people have volunteered to speak as experts on behalf of the ASL. If you wish to be included on the list contact:

Dr Richard Marchant (ASL Secretary)
Email: rmarch@pioneer.mov.vic.gov.au

The following members are prepared to speak on behalf of the ASL on their area of expertise.

Australian Society for Limnology volunteer spokespeople

Prof A. Arthington:
in stream flows, ecology of exotic fishes, conservation of rare fishes.
Centre for Catchment & Instream Res, Griffith University, Natham Qld. 4111. Phone (07)275 7403 , Fax: (07)277 3759

Dr P. Boon:
bacteriological issues, wetlands.
Environmental Management, Victoria University of Tech., PO Box 14428 MMC, Vic. 3000. Phone (03)9365 2214, Fax (03) 9365 2465. email:boopa@stamail1.vut.edu.au

Dr A. Boulton:
intermittent streams, hyporheic zones,
Flinders Ranges. Ecosystem Management, University of New England, Armidale, NSW 2351. Phone (067)733760, Fax (067)732 769 email: aboulton@metz.une.edu.au

Dr K.Bowmer:
pesticides - fate and ecological impact, aquatic plan management.
Deputy Vice-Chancellor, Charles Sturt University, PO Box 588, Wagga Wagga, NSW 2678. Phone (069) 332221, Fax (069) 332060. email: kbowmer@csu.edu.au

Dr M. Brock:
temporary wetlands, aquatic plants.
Botany Department, University of New England, Armidale NSW 2351. Phone (067)732 578, Fax (067)733 283 email: mbrock@metz.une.edu.au

Dr S. Bunn:
stream ecology, ecology of riparian zones, biomonitoring.
Faculty of Environmental Sciences, Griffith University, Nathan, Qld 4111. Phone (07)8757 407, Fax (07)875 7459, email: s.bunn@ens.gu.edu.au

Dr J.Davis:
wetland and stream ecology, ecology of central Australian waterbodies.
BES, Murdoch University, Murdoch WA 6150. Phone (09) 3602939, fax (09) 3104997, email: davis@essun1.murdoch.edu.au

Dr. M. Douglas:

tropical freshwater ecology, intermittent streams, tropical floodplains.

School of Biological and Environmental Sciences, Northern Territory University, Darwin, NT 0909 Ph: + 61 (0)8 89 467261, Fax: + 61 (0) 8 89 466 847, email: michael.douglas@ntu.edu.au

Dr T. Entwisle:
taxonomy and ecology of freshwater macroalgae.
National Herbarium of Victoria, Birdwood Ave, South Yarra, Vic. 3141. Phone (03)96552313, Fax (03)9655 2350 email: Entwisle@botany.unimelb.edu.au

Dr M. Finlayson:
wetlands, Ramsar convention.
Alligator Rivers Region, Office of Supervising Sci, Post Office, Jabiru, NT 0886. Phone (089)799 756, Fax(089)792 499 email:masf@eriss.erin.gov.au

Dr T. Grant:
platypus biology.
Biological Science, University of NSW, PO Box 502, Cronulla, NSW 2230.

Dr Mark Harvey:
watermites.
Western Australian Museum, Francis Street, Perth WA 6000. Phone (09) 4272737, fax (09) 3288686, email: harveym@muswa.DIALix.oz.au

K. Hortle:
impact of mining, impact of development in Se Asia and PNG on rivers.
Environmental Management, 18 Sharrow Road, Mitcham, Vic. 3132. Phone and Fax: (03) 9872 4101

Dr P. Horwitz:
conservation of freshwater invertebrates.
Centre for Ecosystem Management, Edith Cowan University, Joondalup Drive, Joondalup, WA 6027. Phone (08)94005558, Fax: (08)9400 5070 email: phorwitz@cowan.edu.au

Dr P. Humphries:
fish ecology, in-stream flows.
CRC Freshwater Ecology, MDFRC, PO Box 921, NSW 2640. Phone (060)43 1002, Fax:(060)43 1626 email: hump@watson.canberra.edu.au

Dr G. Jones:
cyanobacterial blooms.
CSIRO, PMB 3, Griffith NSW 2680. Phone (069)601563, Fax: (069)601600 email:gary@griffith.dwr.csiro.au

Dr P.S. Lake:
stream ecology, conservation freshwater biota.
Ecology & Evolutionary Biology, Monash University, Wellington Road, Clayton, Vic. 3168. Phone (03)9055 653, Fax:(03)9055613 email: p.s.lake@sci.monash.edu.au

Dr V. Matveev:
plankton food webs, biomanipulation.
CSIRO Land and Water, c/- Water Resources Centre, 1345 Ipswich Rd, Rocklea, Qld. 4106. Phone: (07) 38485710, Fax: (07) 38485191.

K. Muller:
constructed wetlands, wetlands of the lower Murray.
Senior Project Officer, River Murray Catchment Water Management Board, 1 Colman Tce, Strathalbyn SA 5255 phone: (08) 8536 8125, fax: (08) 8536 8126, mobile: 0407 800 274

Dr W.Ponder:
taxonomy, biogeography and biology of freshwater mollusca.
Australian Museum, 6 College St, Sydney 2000. Phone:(02)93206120, Fax: (02)93206050, email: winstonp@amsg.austmus.gov.au

Dr R. Pearson:
tropical freshwater ecology.
Zoology Dept. ACTFR, James Cook, University, Townsville, Qld. 4811. Phone:(077)814 262, Fax: (077)79 6371

J. Puckridge:
ecology of arid zone rivers, ecology of freshwater fish.
Zoology Department, University of Adelaide, Adelaide, SA 5005. Phone (08) 3034455. Fax: (08) 303 4364

Dr N. Rea:
wetland plant ecology, water regime, weeds and conservation.
CSIRO Entomology, TERC, PMB44, Winellie, Darwin NT 0821. Phone (089) 221717, Fax: (089)221714, email: naomi@terc.csiro.au

Dr R. Shiel:
planktonic & littoral microfauna, billabong ecology.
MDFRC, PO Box 921, NSW, 2640. Phone (060) 431002, Fax: (060) 431626

Dr B.Timms:
lake geomorphology, coastal dune lakes, arid zone wetlands.
Dept Geography, University of Newcastle, Callaghan, NSW, 2308. Phone (049) 215080, fax (049) 2155877.

Dr L. Townley:
groundwater-surface water interaction.
Townley & Associates Pty Ltd, PO Box 425, Claremont WA 6910. Phone: +61-8-9284-4903, Fax: +61-8-9284-4905; E-mail: LTownley@Townley.com.au

A/Prof K.F. Walker:
Murray - Darling basin rivers.
Zoology
Dept, University of Adelaide, Adelaide, SA 5005. Phone (08)303 5595, Fax: (08) 3034364

Prof. W.D. Williams:
Salt lakes.
Zoology Dept, University
Adelaide, Adelaide SA 5005. Phone (08)303 4455, Fax: (08) 3034364

ASL MEMBERSHIP FORM

Alternatively go to the ASL website (http://www.asl.org.au/asl_member.htm), follow the link to 'Membership application via the web'. Fill in the details on the form, including credit card details and submit.

MEMBERSHIP FORM

Surname:.....

Given Name: .....

Title: .....

Position: .....

Department: .....

Organisation: .....

Address: .....

.....

.....

Postcode: .....

Telephone: .....Fax: .....

Email:.....

Qualifications:.....

Membership: Member: ( ), Student Member: ( ), 10 Year Member: ( )

Limnological interests: .....
.....

Student declaration

I am a full time student at..... .....

Signed .....

Student status confirmed by Supervisor.....

Signed ..... Date.....

Australian Society for Limnology Inc

Membership Rates for 1999

Member :	$35.00
Student Member:	$17.50
Ten Year Member:	$325.00

Method of payment : cheque ( ) Money Order ( ) Credit Card ( )

Please Debit my:

Bankcard ( ) Visa card ( ) MasterCard ( )

Card number _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

Amount $..... Expiry Date ....

Name of card holder ....

Signature ..... .

Please Return to Margaret Hart
Treasurer/Membership Officer
22 Netherby Ave
Mulgrave Victoria Australia 3170
Fax (03) 9545 3549

REGIONAL EXECUTIVE MEMBERS 1990-2000

NSW	Jane Growns	grownsj@fisheries.nsw.gov.au	02 4982 1232	02 4982 2265
	Deb Nias	dnias@dlwc.nsw.gov.au	03 50219438	03 50213328
Qld	Jon Marshall	marshallj@dnr.qld.gov.au	07 3848 1504	07 3848 5191
SA	Kerri Muller	kerri_muller@triplei.net.au	08 8303 4560	03 8232 3297
WA	Megan McGuire	mcguire@essun1.murdoch.edu.au	08 9360 6298	08 9310 4997
NT	Abbie Spiers	abbies@criss.crin.gov.au	08 8982 9110	08 8982 9103
VIC	Mike Shirley	mshirley@skm.com.au	03 9248 3246	03 9248 3364
Tas	John Gooderham	flatworm@ozemail.com.au	03 9888 2915	
Webmasteer	Simon Josey	webmaster@asl.org.au	02 6270 7665	02 6270 7696

EDITORIAL ADDRESS

Ivor Growns, NSW Fisheries, Private Bag 1, Nelson Bay, NSW 2315
ph (02) 4982 1232 fax (02) 4982 2265 email grownsi@yahoo.com.au

If not deliverable please return to:
Australian Society for Limnology
22 Netherby Ave
Wheelers Hill, VIC, 3150

SURFACE MAIL

POSTAGE
PAID
AUSTRALIA

Print Post Approved

PP381667/00125

Dr R. Marchant
Invertebrate Survey
Museum of Victoria
GPO Box 666E
Melbourne
VIC 3001